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THE NEW CANADIAN BEEF GRADES

by



KENNETH DOUGLAS SMITH

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled " The New Canadian Beef Grades" submitted by Kenneth D. Smith, in partial fulfilment of the requirements for the degree of Master of Science.

ABSTRACT

The grading of beef carcasses in Canada has been an accepted part of the beef industry for over forty years. In the past the criteria used to select animals for each grade were based on visual carcass characteristics and from a general set of opinions as to how the various grades would meet consumer demand. In the late 1960's a large volume of research tested actual carcass measurements and related them to consumer taste panel results. The findings from this work led to a complete revision of the grading act in September of 1972.

As a pilot study, designed to be completed early after the new system came into effect, the research was designed to look for the limitations of this new style of objective grading, and to search for ways to improve the acceptability of the system to both industry and the consumer. The first part of the work tested the accuracy of the new grades as they applied to the beef retailer. The introduction of cutability grading was to provide the meat retailer with a predictor for the amount of saleable meat he could expect from the carcasses he purchased. If the estimated yield was not closely related to actual yield the new system would be of little value.

The second part of the study looks at the economic implications of the new beef grading system. For the implementation of the 1972 grading act to be successful, not only must it be based on accurate selection criteria, but also it must be a workable system acceptable to all sectors of the industry. A combination of secondary data available on the beef industry in Canada and a comprehensive set of interviews with

industry representatives provided a framework within which the economic effects could be judged.

The major findings of the study are that the new cutability grades are an improvement over the previous system of grading, but their value to the beef retailer is limited. The economic advantages and disadvantages created within the industry by the new grades appear to have been minimal. It is also concluded that beef retailer resistance to the present system should be answered with the creation of improved carcass selection criteria that are more closely related to consumer preferences.

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To complete a research project of this size in less than eight months required the assistance of so many. To all the people at the University of Alberta in the Department of Agricultural Economics and Rural Sociology, and the Department of Animal Science, a special word of thanks. Without their willing assistance many parts of the project would have remained little more than ideas.

My supervisor Dr. Murray Hawkins did more than help plan and direct the study to a successful completion. He provided a young researcher with the freedom to grow and learn, an experience for which I am truly grateful. Dr. Roy Berg and Dr Michael Stiles of the University of Alberta were able to provide a student of economics with much needed background in foreign areas of study, all of which was essential to the completion of many parts of the research. The help of Mr. Ralph Bennett in coordinating the industry interviews and his practical advice is gratefully acknowledged.

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CHAPTER I

INTRODUCTION

Need for a Study

Some of the most controversial issues in the beef industry in Canada have been associated with changes in grading. The issues, like the industry, are very complex; but through the concentrated efforts of many leaders in the industry, the controversy has resulted in a change. In September of 1972, a new beef grading system was introduced; it resulted in a complete transformation of the previous grade standards.

The new grading regulations were expected to benefit the total beef industry, but the implications of change on a large and complex industry are never this simple. Grading has been an integral part of the beef industry for over forty years, and a major change in grading, as was experienced in 1972, will require careful assessment and several amendments before the planned objectives can be realized. Any changes that will be required in the grading regulations should be based on information supported by research and not on general opinions; the implications of grading are too large to allow the privilege of casual judgments.

The purpose of the study was to provide an early assessment of some of the changes which were occurring within the beef industry in the first year following the establishment of the 1972 grading regulations. The accuracy and acceptability of grading standards are essential to the success of the new grades. The study was designed to examine both situations. It used specific tests to measure the accuracy of the

new grades, and a market survey of all sectors of the beef industry was used to judge the acceptance of the new grading regulations.

Scope of the Study

The scope of the study was on a national level. It was designed to include considerations for all major sectors of the beef industry. The areas of investigation were not selected to provide a complete analysis, but rather were specifically selected as key areas which required early review after the establishment of the new grades. Several different disciplines of research were incorporated and sections of the study are not strictly interrelated; but all are directly related to specific issues on beef grading. Thus the report contains distinct sections which are complete in themselves and separate in their own right.

Methods of Study

The study contained two major areas of investigation. Each section used a different method of investigation and each is introduced separately.

Evaluation of Cutability Grades

The beef grading specifications, outlined in the new grading act, selected beef carcasses in accordance to two separate sets of criteria: one, a quality assessment of the type of meat within a carcass; the other, selection for the quantity of lean meat available from the carcass in proportion to its weight. It is the quantity criteria which were investigated in this section of the study.

Retail cutability is a term used to express the retail yield or amount of saleable meat that a butcher can expect from a carcass of

beef.¹ To evaluate the new grading system's ability to accurately predict retail cutability, the study tested various grades of carcasses to measure the actual percentage of retail meat which they contained.

Measurements were taken on various parts of the carcasses tested. These measurements were related to their predictive values to test for the best method of selecting beef carcasses for cutability. The study also examined various combinations of the measurements as to their predictive value for retail yield.

The final part of this section of the study incorporated retail yields, wholesale carcass prices, and retail beef prices to investigate pricing accuracy within the new grades. The results were plotted over time, and in various regions; a search for trends that existed in these pricing relationships was carried out.

Economic Effects of the New Beef Grades

The objective of this section of the study was to document the flow of beef from slaughter to the retail meat counter and to analyze the market conditions under which this flow takes place. It attempted to measure any changes which had occurred since the new grades went into effect.

The limited information available on the beef industry in Canada necessitated that the various sectors within the beef industry first be outlined on a national basis. Then interviews with senior representatives from all sectors of the industry were to be conducted to obtain as much information as these individuals were willing to provide.

¹ As no consistent definition was found for "retail cutability", this one was selected for the study as it includes trimmed stewing meat and ground beef as saleable meat.

The interviews with industry representatives from across Canada were on a discussion basis and open questions were directed toward topics such as: description of firm's activities, volumes and terms of trade within the firm's sector of the industry, views on grading, and changes experienced since the new grades became effective. Individuals were asked to substantiate their views, and all replies were carefully considered before the observations were incorporated into the study.

Outline of the Study

The next chapter outlines the historical development of beef grading in Canada, with particular emphasis on the development of the new grades established in 1972. The selection criteria used in the new grades, and a comparison between these and the previous grade standards is outlined in Chapter III. Chapter IV outlines the retail cutability testing done for this study and included are the results and discussion of this research. The Canadian beef market and the goals of grading are described in Chapter V and Chapter VI is a summary of industry views on grading. Chapter VII contains a summary of the results of the various sections of the study, and presents the conclusions, recommendations, and policy implications derived from these analyses.

CHAPTER II

HISTORY OF BEEF GRADING IN CANADA

History provides a tool that is very helpful in understanding a present situation. It also acts as a useful measuring stick when issues involving time and change are being considered. Beef grading in Canada cannot be adequately discussed without some knowledge of the history which so strongly influenced its development. Nor can changes in grading regulations be placed in perspective until they are viewed in relation to their order and time.

This chapter was included to show how Canada's beef industry has struggled with the issues of grading in the past, and to show what effect this has had on the present beef grading system. Particular emphasis is placed on the ten years previous to the 1972 grade changes and points specifically to the forces which caused the last and probably the most dramatic change to occur as it did.

Early Stages of Classifying Beef

The beef carcass remains the product form for grading and it has probably been informally graded or classified on general visual characteristics and by weight since it became an item of trade. By the early 1900's, Canadian beef producers had become concerned that the system for merchandising beef on an informal set of classifications was not providing them with sufficient incentive to improve their beef animals. An average or single price was paid to the producer for live animals sold to packers, yet higher prices were received in the wholesale trade for "premium" carcasses (selected on various types of unofficial classifications).

There was also a general belief that, due to the continual dispute over both live animal and carcass quality before establishing the price, farmer's prices were continually deflated. This belief was supported by the general concern over the possible market control powers held by the few large packing firms. By 1927, when Canada Packer's Ltd. was formed through several mergers, other packing firms had already firmly established themselves on an interprovincial level. Producers during this period of time were limited to small regional markets with expensive rail transportation being the only access to outside markets. They believed that regional prices were lowered due to the market influence of the major packing houses. Thus, the strong rural political lobby present during this time pressed for government specified grade standards which could be applied fairly in all regions, and that would also encourage higher prices to be paid to producers for their "premium" quality cattle.

In 1927, the Federal Government appointed a "Joint Beef Committee" to discuss the issues of beef grading and to forward its recommendations to the government. The Committee was formed on a national level with representatives from the producers, the processors and from Federal and Provincial Departments of Agriculture. During 1927 and 1928, discussions on the benefits and practicality of grading were carried out with the final recommendation being the establishment of a set of Federal beef grading standards. The United States Department of Agriculture had initiated Federal grading of beef in 1927, and the recommendations of the "Joint Beef Committee" paralleled the U.S. system very closely.

Canada's First Grading Act

In September of 1929, the Federal Beef Grading Service commenced

operation. The system provided for optional grading to be performed by the packing plants under the supervision of government inspectors. Two grades were established, "Choice" and "Good", and carcasses not qualifying for these two categories could not be officially graded. Grading supervisors made periodic visits to the packing plants to assist in the maintenance of uniform grade standards.

Industry acceptance of the grading scheme of 1929 was very limited. In 1931, 3.5 percent of the total Canadian slaughter was graded with 36 percent of the carcasses graded "Choice" and 63 percent graded "Good". By 1939, 4.6 percent of the slaughter was graded and the distribution between "Choice" and "Good" remained unchanged at 34 percent and 66 percent respectively.¹

The Great Depression which immediately followed the establishment of the new grading system no doubt had some effect on the acceptability of a beef grading system; but the design of the whole grading system was also at fault. With packing plants allowed the freedom to stamp their own beef, the purchasing sector of the industry quickly discovered inconsistency associated with this type of grading and placed little merit on its selections. The packing plants were basically opposed to grading, and with a system allowing them to mark their own beef on an optional basis, they chose not to promote or encourage its use.

¹ Statistics Canada, Handbook of Agricultural Statistics, 1871 - 1965, Catalogue No. 21-508, p.54.

The British Columbia Grading Act

In 1937, the Province of British Columbia passed the "Beef Grading Act" which was to apply to all carcasses sold in the greater Vancouver area. The system was established due to lack of acceptance of the Federal grade standards, and also to provide a grading system which could classify all types of beef carcasses, not just the two top grades as provided in the Federal Act. The legislation provided for seven grades which carried letter titles (Table 2.1) rather than descriptive terms. The British Columbia system continued for eleven years until 1948 when a full set of Federal grades were introduced and the province agreed to join this program.

The Second World War and Grading Changes

In 1940, the "Meat Board" was established in Canada and it legislated a set of export grade specifications for beef. All beef exported from Canada during the operation of the board had to be graded in carcass form and stamped in accordance with the Board's specifications. The categories outlined under this system carried letter titles, but these titles were different from those then used in British Columbia (Table 2.1).

In 1942, due to the many problems associated with packing houses grading their own beef, the Federal Grading Act was amended. The change meant that beef carcasses were only to be marked by government graders. From this time forward beef grading remained a direct function of government graders.

Exactly one year later, in 1943, the "Wartime Prices and Trade Board" legislated a complete revision of the original Federal Grading Act of 1929. All carcasses previously marked "Choice" were then to be

TABLE 2.1
MAJOR CHANGES IN CANADIAN GRADE CLASSIFICATIONS

Market Class for Live Cattle	C.D.A. Grades, 1929-1947	B.C. Grades, 1938-1948	Meat Bd. Grades For Export, 1940-1948	W.P.T.B. Grades For Price Control, 1943-1947	Natl. Grades, 1947-1958	Natl. Grades, 1958	U.S.D.A. Beef Grades
Choice Steers and Heifers	Choice	A1	A	Special	A	Canada Choice	U.S. Prime
Good Steers and Heifers	Good	A	B	Commercial	B	Canada Good	U.S. Good
Medium Steers and Heifers and Young Cows		B cow	C	Commercial	C	Canada Standard Canada Comm. 1 Class 1,2 and 3	U.S. Comm.
Common Steers and Heifers and Young Cows		C	P	Plain	D1	Canada Utility 1	U.S. Utility
Good and Top Medium Cows		B Cow C Cow	D	Butcher Cows	D2	Canada Utility Cutter 2	

Table 2.1 (Continued)

Market Class for Live Cattle	C.D.A. Grades, 1929-1947	B.C. Grades, 1938-1948	Meat Bd. Grades For Export, 1940-1948	W.P.T.B. Grades For Price Control, 1943-1947	Natl. Grades, 1947-1958	Natl. Grades, 1958	U.S.D.A. Beef Grades
Low Medium and Common Cows Canner and Cutter		D Cow	E	Cutter Cows	D3	Canada Utility 3	Cutter Canner
		D	M	Boner Cows and Bulls	M	Canada Manufacturing	Canner
Bulls and Stags		No Grade	M	Boner Cows and Bulls	3	Canada Bull	Separate Grade Schedule for Stags and Bulls

Note: With each change in grading regulations new grade descriptions were introduced, thus these grades are not strictly comparable. The table is only an approximation of grade category changes.

Source: Canadian Beef Improvement Conference, Winnipeg, 1966.

classified as "Special". The previous classification of "Good" was to be incorporated with a broader group of carcasses marked "Commercial". The grading system was also complete in that it provided categories for every type of beef carcass weighing over 375 pounds (Table 2.1).

The grading scheme introduced during the Second World War resulted in a marked increase in the use of carcass grading. The high price ceiling available for the "Special" carcasses resulted in almost all animals eligible for this category being graded. Also, the retail price controls and the military purchasing specifications for beef resulted in graded beef becoming an accepted term of trade within most of the beef industry.

Post-War Problems With Grading

At the end of World War II, there were three beef carcass grading systems in effect in Canada.

1. The "Wartime Prices and Trade Board" specifications.
2. The "Meat Board" standards and grades.
3. The grades outlined by the British Columbia Grading Act.

The situation was unworkable and a "National Advisory Beef Committee" was convened in 1945 to forward recommendations to the Federal Government. The committee was composed of a membership similar to the "Joint Beef Committee" of 1929, with representatives from all sectors of the industry.

The schedule of beef grading classifications recommended by the "National Advisory Beef Committee" were implemented in 1947. The new regulations were basically a blend of the classifications used in the three previous grading systems (Table 2.1).

The stated objectives of the 1947 Grading Act were to: "devise a system of grades suitable to indicate quality to the consumer and to

provide a useful basis of settlement to the producer."¹ It was also felt that to devise a system using the smallest number of grade categories in classifying beef carcasses was of importance.

The post-war grading system experienced moderate acceptance in the first years immediately after its introduction. Packing firms continued to resist grading but, due to the common use of grading experienced during the war, the percentage of cattle graded was significantly higher than during the pre-war years. In the first year of the 1947 grading system, 18 percent of total Canadian slaughter was graded with virtually all these cattle falling into the top two grades.

The development of the retail chain stores during the 1950's had a strong influence on the acceptability of grading. The majority of these firms would only purchase graded beef. By the mid-1950's, virtually all cattle slaughtered in plants where an official grading service was available were being graded. From this point to the present, graded beef has remained an accepted part of the Canadian beef industry.

Grade Revisions in the Mid-1950's

The beef processing and retailing sectors of the industry, rather than the producers, initiated the next change in classifying beef carcasses. As with other grade changes, all sectors of the beef industry were consulted and after lengthy debate the "Beef and Veal Carcass Grading Regulations" were passed in 1958. There were three major changes in the

¹Canadian Beef Improvement Conference, 1966, p. 5, 8.

classification of beef carcasses which occurred:

1. Grade titles were changed from letters to descriptive terms ("Choice", "Good", etc.).
2. The "Canada Standard" grade was introduced for the "top medium or better conformation, finish and quality steers or heifers."¹
3. Three categories titled "Commercial" were introduced for the majority of cattle which were previously classified as the C grade (Table 3.1).

Descriptive grade titles were introduced at the request of the beef retailer's as they felt that these terms would provide them with a better nomenclature with which to promote the product to the consumers. The terms were closely aligned with the U.S. grade titles, which helped standardize grading between the two countries. The "Standard" grade was introduced due to the common belief within the industry that a strong demand existed at the retail and consumer level for this specific type of carcass. The grade did not meet with general acceptance and soon was being traded at a substantial discount. By 1970 only 6.8 percent of the total kill was classified as "Canada Standard".

Developments Leading to the 1972 Grade Changes

Until the early 1960's, grading of beef carcasses in Canada was based on subjective evaluations of the appearance of the animal as it hung in the cooler. The industrial term for this type of evaluation was "conformation grading". The following description of the "Canada Choice" grade from the 1958 Beef and Veal Carcass Grading Regulations illustrates the subjective terms used to assess "carcass

¹Canada Gazette, August 13, 1958, Part II, Volume 92.

quality:"

Canada Choice beef carcasses are beef carcasses from steers and heifers having the following characteristics:

- a) excellent conformation, finish and quality, relatively blocky, heavily and uniformly fleshed, the neck short and thick, and the shanks fully muscled;
- b) the flesh is firm, velvety, fine grained and of a light or cherry red color.¹

The relationship between carcass evaluations and quality of meat as seen by the consumer was based on beliefs and traditional buying habits. Except for a few researchers, no one had actually tested the relationship between "conformation grading" and consumer preferences for beef. The traditions and beliefs were strongly held and, as research began to question the relationship between grading and consumer wants, members of the processing and retailing sections of the beef industry were reluctant to accept the results.

By the middle 1960's, groups within the beef industry were beginning to express concern over the usefulness of the existing grade categories. It was felt by many that grading basically served the wholesale - retail trade and was of very little value to either the producer or the consumer.

The predominant issue was over the feeling that a significantly large number of overfat cattle were being supplied to the market. The issue was summarized as follows:

- 1. That too many carcasses in the top, Choice grade carry surface fat cover that is unnecessarily high in relation to:
 - a) Consumer preference
 - b) Requirements for flavor and tenderness in animals of the age now customarily marketed.

¹Canada Gazette, August 13, 1958, Part II, Volume 92.

2. That the live basis of selling, used at public stockyards puts a premium on fat cover that is unnecessary and inefficient, because the buyer buys on prospective yield and grade, yield¹ being based on the dressed carcass.
3. That the grading system does not look at the fat-lean relationship in the cuts (for example as measured by the eye of lean, and the rib-fat measurements), which may well show that some carcasses are distinctly overfat, or large-boned, but will nevertheless grade Choice on the present standard. The criticism implies that grading should in part be based on examination of the rib cut in carcass.²

It was due to a strong producer concern over these issues that the Canadian Beef Improvement Conference was held in September of 1966. The conference was sponsored by the Canadian Cattlemen's Association and the Canadian Federation of Agriculture, the two strongest groups representing cattle producers on a national level. With representatives from all sectors of the beef industry present, the above listed concerns with grading were confirmed and an "Industry Committee on Beef Grading and Quality" was set up to review all aspects of grading.

The "Industry Committee" first met one year later in November of 1967. At this time it appointed a subcommittee to investigate all available research evidence on factors influencing beef quality. The subcommittee was composed of research people employed by Federal research stations across Canada and by various Canadian universities.

In April of 1968, the subcommittees presented its report to the industry representatives. The central theme of the subcommittee's

¹"Yield" is an industry term used to describe carcass weight as a percentage of live animal weight.

²Canadian Beef Improvement Conference, 1966, p. 5-15.

report was subjective versus objective methods of grading. The research available at the time clearly indicated that the subjective grade standards were inadequate indicators of beef quality. There was also evidence which indicated that, due to large variations in fat cover on beef carcasses, the subjective evaluation of conformation was also a poor estimator of retail yield. Research on the U.S. cutability grades indicated that considerably more reliable predictors of retail yield were presently being used.

The report included several conclusive findings from the research it found available; but it also proposed two major research projects which the subcommittee felt were necessary before changes in the existing grading system should be considered. The objectives of these research projects were:

A. Beef Carcass Lean Yield Research Proposal: Objectives

1. (a) To establish the relationship of carcass weight and external fat with carcass quality as measured by trimmed lean content of the part and the whole of the carcass.

(b) From these relationships to develop objective procedures for evaluating lean content of each of the major cuts.
2. (a) To examine procedures for measuring carcass traits related to meat quality.

(b) To determine relationships between meat "quality" traits and lean content.
3. (a) To examine the possibility of regional differences in quality and lean content.

(b) To define sex differences in quality and lean content.

(c) To examine relationships between age or carcass and quality or lean content.

4. To examine the relationships between length of aging period and cooler shrink in relation to fat cover and other carcass attributes. It is considered that a separate study will be required to evaluate the relationship between aging and meat quality traits.

B. Beef Aging Proposals

1. To determine the relationship between length of aging period and tenderness.
2. To examine the influence of it on tenderness development.¹

The research was proposed to answer specific questions which needed clarifying, but also because it was apparent that major revisions in the total grading system were required, and substantial Canadian documentation would be needed to convince the beef industry that such major changes were justified.

The presentation of the subcommittee's report resulted in a split between the producers and the processors in the "Industry Committee." The Meat Packers Council² was not convinced that any major research should be undertaken and was not interested in considering any major changes in the grading system. The beef producers' associations believed that the research should be undertaken and were willing to provide funding to carry out the projects.³ After considerable debate the research projects were

¹"Report of Subcommittee on Beef Quality Research," report presented to Industry Committee on Beef Grading and Quality, Toronto, April 6, 1968.

²The Meat Packers Council of Canada is an industry association whose members are meat packing firms engaged in slaughtering or processing livestock and meat products. It is the major association representing approximately 70 percent of this sector of the industry.

³Report of Committee Meeting Re: Grading Standards, Ottawa, January 15, 1969.

completed, primarily by the staff at the Lacombe Research Station. The results of the studies along with recommendations for a new grading system were presented to members of the "Industry Committee" in a report prepared by Dr. H.T. Freeden in February, 1970 (Appendix 1). The report included comparisons between its recommendations and the grade standards which were still in effect from 1958:

Comparison with present grade standards

1. The main distinction is the introduction of specific quantity criteria based on objective measurements. This provision of quantity sub-groups has permitted reduction of the number of grade names (e.g., the primary distinction between Choice, Good, Standard and Commercial 3 carcasses is degree of fat cover).
2. Subjective appraisal of conformation has been replaced with the objective criterion of rib eye area.
3. Quality criteria remain as at present--specifically the definition of age. Present grade specifications do refer to 'flesh firm, velvety, fine grained, light or cherry red color' as a requirement for choice carcasses but procedures for appraising these items are not prescribed. Pending the development of criteria descriptive of actual quality (and techniques for objective measurement thereof), it seems prudent to avoid encumbering official grading standards with details of doubtful validity .
4. Carcasses encompassed by Class 1 as herein described would include those now graded Choice, Good, Standard and C1. These grades comprised approximately 68.6% of all carcasses graded in Canada in 1968 (35.9% Choice, 20.9% Good, 8.6% Standard and 3.2% CL.) Note that in the first 43 weeks of 1969, 62% of all carcasses were Choice and Good.

The proposed system called for a completely new type of beef grading based on objective selection criteria. It also called for all carcasses graded to be cut into quarters (ribbed) before grading in order to obtain the objective measurements. In the report, the research in support of the proposal was summarized (Appendix 2).

From the time the report and its proposals were presented to the

"Industry Committee" in February, 1970 until the grading system was changed in September of 1972, heated negotiations between the processor and the producer associations took place.¹ The tone of this debate is described in the following Member Bulletin of the Meat Packers Council dated March 17, 1970 and entitled "Snow in Winnipeg":

In retrospect, the meeting of the Industry Committee on Beef Grading and Quality held at the International Inn in Winnipeg on March 12th can perhaps best be described as a skillfully-engineered "snow job". As the meeting progressed it was clearly apparent that the cattlemen, with Dr. Gordon Burton, rancher from Claresholm, as their chief spokesman, had in an advance meeting decided to pump for the grading proposals developed by Dr. Howard Fredeen and rubber stamped by most other animal scientists. While the M.P.C. position paper was given a polite hearing in the open meeting, that was about as far as it went. The cattlemen seemed to feel it was too conservative, and they were in a mood for a more radical change. As Jonathan Fox, polled Hereford breeder from Lloydminster, put it: 'The M.P.C. proposal would be like docking a pup's tail an inch at a time--we want to dock it all at one stroke, and be done with it.'

After considerable debate in which all sectors of the industry participated in varying degree; it was agreed that the C.C.A.-C.F.A. Ways and Means Committee should sponsor further negotiations with packers and other groups, in an effort to arrive at one mutually agreed proposal for revision. A motion proposed the objective be (and a hard one to meet) to try to resolve the problem by June 1st, 1970.

What the Cattlemen Want

"The "Fredeen Formula" which up to this point is one the cattlemen say they support, leans far more heavily on "quantity" factors than "quality". In fact, relative youthfulness or maturity is the only "quality" measure retained. Coupled with this, all

¹The negotiations actively involved the meat processors and the cattle producers. The retailers were not directly involved although they were represented at the key meetings.

carcasses would have to be fully ribbed, the fat measurement taken at three rib-eye locations, and the area of the rib-eye measured.

Probably the most drastic change, though, would be the scrapping of the Choice - Good (Red-Blue) top quality concepts with instead a red grade marking going on all relatively youthful cattle which now might go in Choice, Good, Standard or Commercial grades--virtually everything from a Jersey heifer to a top Angus or Hereford steer. It is also proposed to grade young bull carcasses on a par with steers or heifers.

Is the Course Set Toward 100% Rail Grading?

If, after negotiations, the above formula were to be adopted and the grade standards revised accordingly, the question is: Would this mean the end of optional live-dressed selling or would packers be forced to adopt rail settlement for their own protection? Could cattle buyers predict fat thickness and rib-eye area with acceptable precision on the hoof?

These are questions Council members should seriously consider for they are liable to be crucial. The cattlemen say they want optional live or rail grade selling to continue, claiming live buyers could "adjust" to the new grades. At the same time and not very consistently, they contend graders cannot evaluate muscling by studying the conformation of the dressed carcass.

Conceivably a buyer with some practice might learn to "average" his live buy reasonably well to conform to the proposed 8 fat categories and 8 rib-eye area classes. But even if this could be done, it would negate what the cattlemen claim they want--i.e., a closer approximation of price to intrinsic value and a reflection of consumer preference back through the chain.

The only accurate way to relate the wholesale value of individual carcasses back to individual cattle sold by each producer is by 100% rail grading and identification, at the same time this would permit demerits for grub damage, old bruises, etc. as well as permit a solution to the "taggy" cattle

problem.

A Time to Stand

The Council will have to approach the forthcoming renegotiations very carefully. It would be foolish to adopt a too rigid stand, e.g., to contend that some type of ribbing could not under any circumstances be considered. But it would also be just as unwise to be too ready to agree to unsound proposals, such as the scrapping of almost all accepted "quality" concepts and the cheapening of the Red Brand to a meaningless "catch-all" category including poorly-muscled and unfinished plain cattle.

Whatever changes in the beef grades are made they will have to be acceptable to the whole industry, and especially to the feeder, packer and retailer. They will also have to be practical and not restrict trading or unreasonably complicate settlement. And above all, they must not downgrade the beef quality image.

It may be a little tough to satisfy all these requirements, but it is not an impossible prescription. After all, there are definitely improvements which could be made in the present beef trade, and some changes are overdue.

Many issues and personalities played a part in the negotiations which took place over the next year. The producer associations stood firm on their stand for a grading system based only on objective criteria and the processors pressed to retain some of the subjective standards, particularly for what they called the "beef quality image".

By the summer of 1971, concessions had been accepted by both parties in what seemed to be a reasonable compromise. The CCA and CFA had won considerations for some type of objective quantity standard similar to the USDA cutability standards and the MPC had retained quality standards which were to be made from subjective evaluations of the rib-lean texture (longissimus dorsi muscle), marbling, and color and

texture of fat. These agreements were at the policy level only and it was felt by all negotiators that there were some physical carcass handling problems which would need answering before the committee would be prepared to submit specific grade changes.

One more major piece of research was completed before the new grades were established and the results of the study were presented to the negotiators in July, 1971. It was a study to examine some of the practical and commercial problems which would be involved with introducing a grading system of the type being considered. The objectives of the study were:¹

1. To compare the accuracy of three different methods of measuring fat thickness.
2. To compare the accuracy of two different methods of measuring rib eye area.
3. To compare knife cut ribbing vs full ribbing.
4. To study the effect of ribbing the day after slaughter vs two days after slaughter on meat quality.
5. To study the effect of ribbing the day after slaughter vs seven days after slaughter on meat quality.
6. To study the effect of cooler space capacity and handling efficiency on partially ribbed carcasses.
7. To study the problems associated with railroad shipping of partially ribbed carcasses.

The results of the study answered several key questions in terms of the practicality of using objective criteria for the grading of beef carcasses (Appendix 3). For the negotiators it cleared many issues

¹ Iler, Locking and Usborne, A Study of Some Methods of Evaluating and Handling Beef Carcasses For the Purposes of Grading, Paper presented to the Industry Committee on Beef Grading, Toronto, July, 1971.

from the table and allowed for an agreement to be reached.

This final report cleared the way for a joint brief prepared by the Meat Packer's Council, the Canadian Cattlemen's Association, and the Canadian Federation of Agriculture. The brief was entitled Proposal for a New Beef Carcass Grading Schedule and was submitted to the "appropriate authorities of the Canada Department of Agriculture" in October, 1971. The beef carcass grading system recommended in the proposal was basically similar to the one which was enacted ten months later with the passing of the Beef Carcass Grading Regulations. The act contained a few minor changes from the "Joint Proposal" which government authorities explained as practical necessities for the operating of an efficient and useful grading service.

CHAPTER III

THE 1972 BEEF GRADING ACT

Effective September 5, 1972 a new beef carcass grading system was introduced in Canada. The act was the first in Canada to provide a specific definition of a beef carcass and it allowed for grading of untrimmed carcasses only. Selection for the grade standards was made on two sets of criteria:

1. Quantity as measured by:
 - a) external fat cover on the longissimus dorsi muscle between the 11th and 12th ribs,
 - b) carcass weight class.¹
2. Quality as judged by:
 - a) age, as set out by various maturity classes and measured by bone ossification,
 - b) texture and marbling of the longissimus dorsi muscle (rib eye),
 - c) fat color and general distribution of fat.

The regulations required that all carcasses were to be knife ribbed before grading. The new system, as with the previous beef grading service, was to be provided on an optional basis, free of charge, by Agriculture Canada.²

¹Four weight classes in the top two grades--estimated to take in 80% of all carcasses graded. Chapter IV outlines these in detail.

²Previous to 1971, "The Canada Department of Agriculture".

TABLE 3.1

A COMPARISON BETWEEN THE 1972 AND THE 1958 BEEF GRADING ACTS

- MATURITY: Physiological age, not calendar age - as determined by the degree of ossification (hardening of cartilage).
- QUALITY: Color, texture, and firmness of the fat and lean.
- MEAT YIELD: As determined by the fat covering. Research has shown that there is a relationship between the amount of fat covering and the meat yield. Carcasses will be knife-ribbed between the 11th and 12th ribs to measure fat covering.

NEW GRADE		STANDARDS		OLD GRADES	
1. CANADA A - (youthful; good to excellent quality)	a.	Maturity Class 1		Canada	Choice
	b.	Lean - firm		Canada	Good
		- fine texture		Canada	Standard
		- bright red color		Canada	Commercial
		- slight marbling (minimum)			Class 3
	c.	Fat - firm			
		- white or slightly tinged			
	d.	Muscling - free from marked deficiency			
	e. Further described by Fat Levels 1,2, 3, and 4 for Canada A as follows:				
Warm Carcass					
Wt. (lbs.)		1.	2.	3.	4.
300 - 499		.2-.3	.31-.5	.51-.7	.71+
500 - 699		.2-.4	.41-.6	.61-.8	.81+
700 +		.3-.5	.51-.7	.71-.9	.91+
2. CANADA B - (youthful; medium quality)	a.	Maturity Class 1		Canada	Choice
	b.	Lean - moderately firm		Canada	Good
		- somewhat coarse texture		Canada	Standard
		- bright to medium dark red		Canada	Commercial
		- no marbling (minimum)			Class 1
	c.	Fat - firm or slightly soft		Canada	Commercial
		- white to pale yellow			Class 3
	d.	Muscling - free from marked deficiency			
	e. Further described by Fat Level 1, 2, 3 and 4 for Canada B as follows:				
Warm Carcass					
Wt. (lbs.)		1.	2.	3.	4.
300 - 499		.1-.3	.31-.5	.51-.7	.71+
500 - 699		.1-.4	.41-.6	.61-.8	.81+
700 +		.2-.5	.51-.7	.71-.9	.91+

Table 3.1 (continued)

NEW GRADE	STANDARDS	OLD GRADE
3. CANADA C - CLASS 1 (youthful and intermediate age; medium to good quality)	a. Maturity Classes I and II b. Lean - moderately firm - bright to medium dark red c. Fat - firm or slightly soft - white to pale yellow - light covering - no excess proportion d. Muscling - low medium to excellent e. To include carcasses with less than Fat Level 1, Canada B with Canada B quality and carcasses less than 300 lbs.	Canada Commercial Class 1 Canada Commercial - Class 2
4. CANADA C - CLASS 2 (youthful and intermediate age; poor quality)	a. Maturity Classes I and II b. Lean - soft - coarse and sinewy texture - bright to extremely dark red c. Fat - firm to soft - white to lemon yellow - slight covering - no excess proportion d. Muscling - excellent to deficient e. To include carcasses with less than Fat Level 1, Canada B and less than Canada B quality; also carcasses less than 300 lbs.	Canada Commercial - Class 1 Canada Commercial Class 2 Canada Utility Class 1
5. CANADA D - CLASS 1 (mature select cows)	a. Maturity Class III b. Fat - firm - white to pale yellow - well over rib and loin - moderately over hips and chucks - no excess proportion c. Muscling - good to excellent with no marked deficiency	Canada Utility - Class 2
6. CANADA D - CLASS 2 (mature good to medium cows and steers)	a. Maturity Class III b. Fat - firm to slightly soft - white to lemon yellow - cover most of surface - no excess proportion c. Muscling - medium muscling which may have some deficiency	Canada Utility - Class 2 Canada Utility - Class 3

Table 3.1 (continued)

NEW GRADE	STANDARDS	OLD GRADE
7. CANADA D - CLASS 3 (mature fair to plain cows and steers)	a. Maturity Class III b. Fat - soft - white to deep lemon yellow - light to slight covering - no excess proportion c. Muscling - fair muscling which may have marked deficiency	Canada Utility - Class 3
8. CANADA D - CLASS 4 (mature manu- facturing cows and steers)	a. Maturity Class III; but to include carcasses extremely deficient in muscling from maturity Classes I and II b. Fat - little or none to an excess proportion - to include those with excess proportion from Maturity Class II c. Muscling - poor	Canada Utility - Class I Canada Manufacturing
9. CANADA E - (mature stags and bulls)	a. Maturity Class III but may include more youthful animals if: b. Lean - coarse and sticky - dark	Canada Bull

Note:

All beef carcasses which are graded must be branded as follows:

Canada A-1, A-2, A-3 and A-4	- Red Ink
Canada B	- Blue Ink
Canada C	- Brown Ink
Canada D and E	- Black Ink

The 1972 Beef Grading Act¹ completely revised the beef carcass classification system in Canada. The new selection criteria for both quantity and quality estimates mean that no previous grade category is distinguishable within the new classifications. What was previously "Canada Choice" could presently be classified as either grade A or grade B. It would then fall within one of the four fat level classifications used to estimate retail yield (Table 3.1). The beef industry will require several years to assess and adjust to such a major set of revisions.

¹Canada Gazette, Part II, Vol. 106, No. 18.

CHAPTER IV

ASSESSMENTS OF THE QUANTITY STANDARDS IN THE NEW BEEF GRADING SYSTEM

Introduction

The federal beef grading schedule which came into effect September 5th, 1972, introduced the concept of cutability or quantity of saleable beef. Carcasses are first graded by maturity and quality into nine quality grades as outlined in Chapter III. Maturity refers to the age of the animal and is assessed by the degree of ossification or hardening of cartilage in the carcass. Other quality factors used in grading include color and texture of lean, marbling, fat color, firmness and extent of fat covering and muscling. Grades A and B are the top quality grades for youthful carcasses.

After the quality grades are established, carcasses within the A and B grades are subdivided according to expected cutability. Categories from 1 to 4 based on the minimum depth of fat over the rib eye are shown in Table 4:1. All carcasses within the A grade are considered to be top in quality; A1 carcasses should yield the highest percentage of saleable meat, and the A4 the least, A4 requiring more fat trimming before presentation to the consumer.

The cutability grades are based on objective measurements. The minimum thickness of external fat cover over the longissimus dorsi muscle (rib eye muscle) between the 11th and 12th ribs, and warm carcass weight are the measurements used. (Table 4.1)

Table 4.1
"A" GRADE CUTABILITY GROUPS

Warm Carcass Weight (lbs.)	Canada A1	Canada A2	Canada A3	Canada A4
300-499	.20 to .30	.31 to .50	.51 to .70	over .70
500-699	.20 to .40	.41 to .60	.61 to .80	over .80
700 & over	.30 to .50	.51 to .70	.71 to .90	over .90

As indicated in Chapter II, the recommendations of the research committee (Appendix 1) were modified through industry negotiations into the classifications presented here. The original proposal recommended that cutability indexes be used rather than four cutability classes. It also recommended that the rib eye area and three measurements of the external fat thickness be used to predict cutability. The changes in the cutability standards were a result of compromise. The rib eye area measurement could not be obtained as the packing industry would not agree to full ribbing of carcasses before grading. The three fat measurements were replaced by the one minimum measurement when a subsequent research study indicated it to be almost as reliable a predictor.¹

The objectives of the study reported in this section were to assess the accuracy and implications of the cutability classifications introduced by the new grading system.

Materials and Methods

One hundred and seventy-four sides of beef were processed in retail stores in Edmonton and Calgary. Cooperating stores were

¹Iler, Locking and Usborne, A study of Some Methods of Evaluating and Handling Beef Carcasses for the Purposes of Grading, July, 1971. A report submitted to the Committee on Beef Grading.

Canada Safeway Ltd., Woodward Stores Ltd., Co-op and I.G.A. in Edmonton, and Canada Safeway Ltd., and Co-op in Calgary. In total, fifty-four individual retail outlets were used in the sample.

The half carcasses used in the study were all from steers and were all within the A grade. They were randomly selected from various packing plants within the local trade areas from carcasses weighing between 500 and 700 lbs. The A1, A2, A3, and A4 classifications were sampled as well as an unofficial grade titled A1X which was used to describe what the trade referred to as "Dairy-Type" carcasses.

The retail meat cutters were instructed to prepare each side as they would to sell it on their meat counters. Some standardization of the cutting procedures was necessary to make the results from different outlets reasonably comparable (Appendix 4). For each side tested, weights were recorded for: cold half carcass; wholesale primal cuts; retail saleable cuts from each primal (including ground beef and stewing beef); and discarded fat and bone. The Production and Marketing Branch of Agriculture Canada provided hot carcass weights; the sex of each animal tested; measurements of rib eye area; top, middle and lower fat measurements between the 11th and 12th ribs; marbling and color of lean as well as grade.

Results and Discussion

Cutability in Sample Tested

Of the 174 half-carcasses tested, 163 were acceptable for use in the study. Eleven sides were withdrawn from the sample due to errors in data collection such as: incorrect sex classification, large cutting losses, or incorrect weight measurements. By grade classification

the sides tested were distributed as outlined in Table 4.2

Table 4.2

RETAIL CUTABILITY SAMPLE - JULY 1973

<u>Grade</u>	<u>Number Used in Test</u>
A-1	43
A-1X	29
A-2	45
A-3	23
A-4	23

In the study there were three main products measured from each side:

1. Trimmed retail cuts, which included trimmed stewing meat and ground beef.
2. Fat waste.
3. Bone waste.

Each of the products was calculated as a percentage of the original cold side weight. Means and standard deviations for percentages of each product are presented in Tables 4.3, 4.4, and 4.5 . The standard deviation indicates the variation plus or minus the mean within which two-thirds of the samples from the particular grade are expected to fall. Most (95%) carcasses tested in a grade category should give results within plus or minus two standard deviations of the mean. The difference between means were tested using the Duncan test at the 95 percent level of significance, and the results are noted by superscripts.

TABLE 4.3

RETAIL CUTABILITY AS PERCENTAGE OF COLD HALF-CARCASS WEIGHT

<u>Grade</u>	<u>Mean</u>	<u>Standard Deviation</u>
A1	78.20 ^a	2.24
A1X	76.65 ^b	3.28
A2	76.04 ^b	2.32
A3	73.43 ^c	2.90
A4	70.60 ^d	3.75

Note: Standard Error of Means: 0.5055

TABLE 4.4.

TOTAL FAT TRIM AS PERCENTAGE OF COLD HALF-CARCASS WEIGHT

<u>Grade</u>	<u>Mean</u>	<u>Standard Deviation</u>
A1	10.98 ^a	2.54
A1X	11.84 ^a	3.15
A2	13.74 ^b	2.22
A3	16.28 ^c	2.66
A4	19.72 ^d	4.02

Note: Standard Error of Means: 0.5128

TABLE 4.5

TOTAL BONE TRIM AS PERCENTAGE OF COLD HALF-CARCASS WEIGHT

<u>Grade</u>	<u>Mean</u>	<u>Standard Deviation</u>
A1	10.82 ^a	0.983
A1X	11.51 ^b	1.089
A2	10.23 ^c	0.956
A3	10.29 ^c	0.878
A4	9.68 ^d	0.821

Note: Standard Error of Means: 0.17733

a,b,c Means with different superscripts differ significantly at $P < 0.05$.

From A1 to A4 mean cutability decreased by 7.6 percent (Table 4.3). Differences in cutability between each of the regular grades (A1, A2, A3, and A4) were statistically significant. The A1X grade had cutability not significantly different from A2, but significantly less than A1. The large standard deviations associated with each mean indicate that the cutability grade is not reliable for estimating cutability of individual carcasses. For individual carcasses a range in cutability of 8 to 10 percent was obtained within each grade category - much too wide for general application. However, one could expect the average of results from twenty to thirty carcasses within a category to fall within about 1 percent above or below the mean for that category.

Fat trim accounted for the major differences in cutability between grades (Table 4.4) however, the difference in fat trim between A1 and A1X carcasses was not statistically significant. Fat trim percent showed similar variability within grades as did cutability, the variation in the A4 grade being extremely wide.

Bone trim percent decreased from A1 to A4, an opposite trend to that for fat trim (Table 4.5). A1X carcasses had significantly more bone trim than A1 carcasses, and A2 and A3 carcasses did not differ in this measurement. Bone trim showed less variability than fat trim or cutability - the mean of a sample of 20 to 30 carcasses should fall within plus or minus 0.3 percent of the mean for the category.

There are certain implications to the meat trade arising from the results of this study. There are differences in the average cutability percentages among the regular grades (A1, A2, A3, and A4)

These differences are most closely related to the amount of fat trim removed in cutting to retail specifications. Bone trim is slightly higher from the less fat A1 carcasses and slightly lower from the fatter A4 carcasses. Thus a retailer could establish average cutability percentages which he would expect from carcasses in each grade category and adjust his buying differentials accordingly. If his volume in each grade category was high, he should come out reasonably well on average.

However, one problem for the retailer arises because of the extreme variability which occurs within each grade category. The overlap in cutability percent among all grades is very high. This variation is so great as to make the grade categories quite unreliable when selecting individual carcasses. It is not apparent why such a large variation should occur within a cutability grade, however, variations in consistency of trimming to meet retail specifications could be a contributing factor. Since the study used a large number of meat cutters from a large number of retail stores, cutting variation would be expected to be large. The amount of variation from this source could only be determined by subjecting the trimmed retail cuts to further processing to determine how much fat and bone remains. Consistency of retail cutting becomes more difficult as fat level goes up, since removal of internal or seam fat is not only difficult, but its removal also tends in some cases, to destroy the integrity of the cut. Trimming of extremely fat carcasses also increases the labor cost considerably. It was observed that the amount of fat in the ground beef portion was proportional to the general fat level of the carcasses from which it came. Retailers would thus have to mix ground beef from leaner carcasses with that from fatter carcasses to offset excessive fat.

Assessment of "Dairy-Type" Carcasses

This study was also designed to examine whether or not apparent trade discrimination against the "dairy-type" steer (A1X in this study) was justifiable. The cutability percent from A1X steers was 1.6 percentage units less than for A1 steers and 0.6 percentage units more than A2 steers; the latter difference was not statistically significant. It seems clear that on average the cutability of the type of steer represented in this study by A1X is slightly inferior to that of a regular A1 carcass. The cause of this difference seems to be mostly related to the 0.7 percentage units more bone trim and (statistically significant) and possibly to 0.8 percentage units less fat trim (not statistically significant). Dairy-type steers have been reported to have a higher percentage of bone and a lower muscle to bone ratio than beef steers.¹ Thus it is not surprising that dairy-type steers would have a greater percentage of bone trim. Since the cutability grades are established on the basis of backfat thickness, it might be expected that A1 and A1X carcasses should have a similar amount of fat. Since the differences in fat trim between these categories were not statistically significant, it may be a little risky at this point to make too much of the observed difference. However, there is some evidence that dairy-type animals have a higher proportion of intermuscular fat compared to subcutaneous fat than beef animals.² If this is the case, we might expect more fat trim from dairy-type steers than from

¹ Berg, R.T., 48th Annual Feeders' Day Report, Department of Animal Science, University of Alberta, 1969, pp. 21-24

² Berg, R.T., and Butterfield, R.M., Unpublished data, Department of Animal Science, University of Alberta

beef-type steers, when both groups have the same level of external (subcutaneous) fat.

Although the A1X category in the present study was inferior in cutability to the regular A1 category, it should be noted that it was equal or superior in cutability to the A2 category. Since A2 is considered by many in the trade to be nearer to the desired ideal carcass, the value of both the A1X and the A1 should be considered in relation to the value of the A2.

Possibility of Improving Cutability Prediction

As has been mentioned, cutability grading is now based on a measurement of backfat depth at the minimum point over the rib-eye. The present study attempted to assess the reliability of this measure for predicting cutability and possibility of using alternative or additional measurements for increasing the accuracy of prediction. In Table 4.6 simple correlation coefficients of a group of measurements with cutability percent are presented. Carcasses from steers classified as A1X were excluded from this part of the study. r^2 is the coefficient of determination and measures the percentage of the variability in cutability which can be accounted for by variation in the particular correlated variable. The standard error (S.E.) measures the residual variation in cutability unaccounted for by the correlated variable.

Fat (total), the sum of three regular measurements over the rib-eye provides the best correlation with cutability. It is closely followed by Fat (minimum) which is the measure used in assigning cutability grades. In this study, of the fat measurements

TABLE 4.6
SIMPLE CORRELATION COEFFICIENTS OF SEVERAL MEASUREMENTS
WITH CUTABILITY PERCENT IN A GRADE STEERS¹

Factor	Correlation Coefficient	$r^2 \times 100$ %	S.E. %
Grade	-0.7031	49.43	2.61
Hot Carcass Wt.	-0.2015	04.06	3.60
Marbling score	0.4576	20.94	3.27
Rib eye area	0.3446	11.87	3.45
Fat (top)	-0.5612	31.49	3.04
Fat (middle)	-0.7094	50.32	2.59
Fat (bottom)	-0.6533	42.68	2.78
Fat (min.)	-0.6930	48.02	2.65
Fat (total)	-0.7303	53.33	2.51

¹ All carcasses not included.

made, the top measurement was the least reliable indicator of cutability. Rib-eye area by itself accounts for only 11.9 percent of the variation in cutability, and hot carcass weight, a measure used in the U.S.D.A., accounts for only 4.1 percent. The Yield Grading System accounts for only 4 percent of the variation in cutability.

Combinations of measurements can be used in attempting to increase the accuracy of estimating cutability. Multiple regression of equations for predicting cutability using various combinations of simple measurements are presented in Table 4.7. The combinations used allow interpretation of the usefulness of adding other measurements to either fat-total or fat-minimum measures. r^2 and S.E. have the same interpretations as in the previous table and are used to evaluate the improvement in prediction as new variables are added. Neither hot carcass weight nor rib eye area improve the predictions using fat thickness alone (equations 3, 4 and 5 vs. 1 and 2). Using both rib eye area and hot carcass weight with the fat measures did not result in improvement over using just the fat measurements for prediction (equations 6 and 7).

The study confirms that, of the measures used, the three measurements of backfat give the best prediction of cutability. Use of a minimum fat measurement as in the grading schedule is not significantly less accurate than using the total of three. Rib-eye area and hot carcass weight added little to the accuracy of predicting cutability.

TABLE 4.7

MULTIPLE REGRESSION EQUATIONS FOR PREDICTING PERCENT CUTABILITY

Selection	$r^2 \times 100$	S.E.
	%	%
1. $y = 84.60 - 4.38 F (\text{tot})$	53.3	2.52
2. $y = 81.18 - 10.60 F (\text{min})$	48.0	2.66
3. $y = 90.00 - 4.30 F (\text{tot}) - 0.009 \text{ HCW}$	54.6	2.51
4. $y = 83.44 - 4.29 F (\text{tot}) + 0.090 \text{ REA}$	53.4	2.54
5. $y = 87.22 - 10.39 F (\text{min}) - 0.010 \text{ HCW}$	49.6	2.64
6. $y = 88.31 - 3.89 F (\text{tot}) - 0.015 \text{ HCW}$ + 0.38 REA	55.7	2.50
7. $y = 85.57 - 9.19 F (\text{min}) - 0.016 \text{ HCW}$ + 0.44 REA	51.0	2.62

y = retail yield

$F (\text{tot})$ = fat total (sum of top, middle and bottom fat)

$F (\text{min})$ = fat minimum

HCW = hot carcass weight

REA = rib eye area

Wholesale and Retail Prices and the Cutability Grades

A further objective of the study was to analyze how wholesale pricing responded to the establishment of cutability grades. Wholesale prices from each grade were obtained for two markets (Toronto and Calgary) from Agriculture Canada's Weekly Livestock and Meat Trade Report for the period from January to July, 1973 (Table 4.8). The wholesale prices for A1X were obtained by subtracting 2.5 cents from the A1 price, because a cross-section of industry representatives indicated this category averaged between two and three cents below the A1 for the period under study.

Toronto retail prices were based on surveys conducted by the Canadian Cattlemen's Association, and Calgary retail prices were based on surveys by the Alberta Cattle Commission. The same retail price schedule was applied to retail cuts from all cutability categories, the assumption being the retail preparation would make cuts from various categories comparable.

Total retail value for each side of beef was calculated by summing twice the weight of each retail cut, times the appropriate price (fat and bone trim priced at 1¢ per pound). Average retail value was calculated for each grade category each week. Wholesale value was calculated by multiplying twice the half carcass weight times the appropriate wholesale price from Table 4.8 .

Gross retail margin was calculated as wholesale value minus retail value, and provided no provision for retailer's cost of preparation. Gross retail margins for the period under study are shown as cents per lb. of carcass weight for the Toronto market in Figure 4.1, and for the Calgary market in Figure 4.2 .

FIGURE 4.1
RETAIL GROSS MARGINS, TORONTO, JAN. TO JULY, 1973

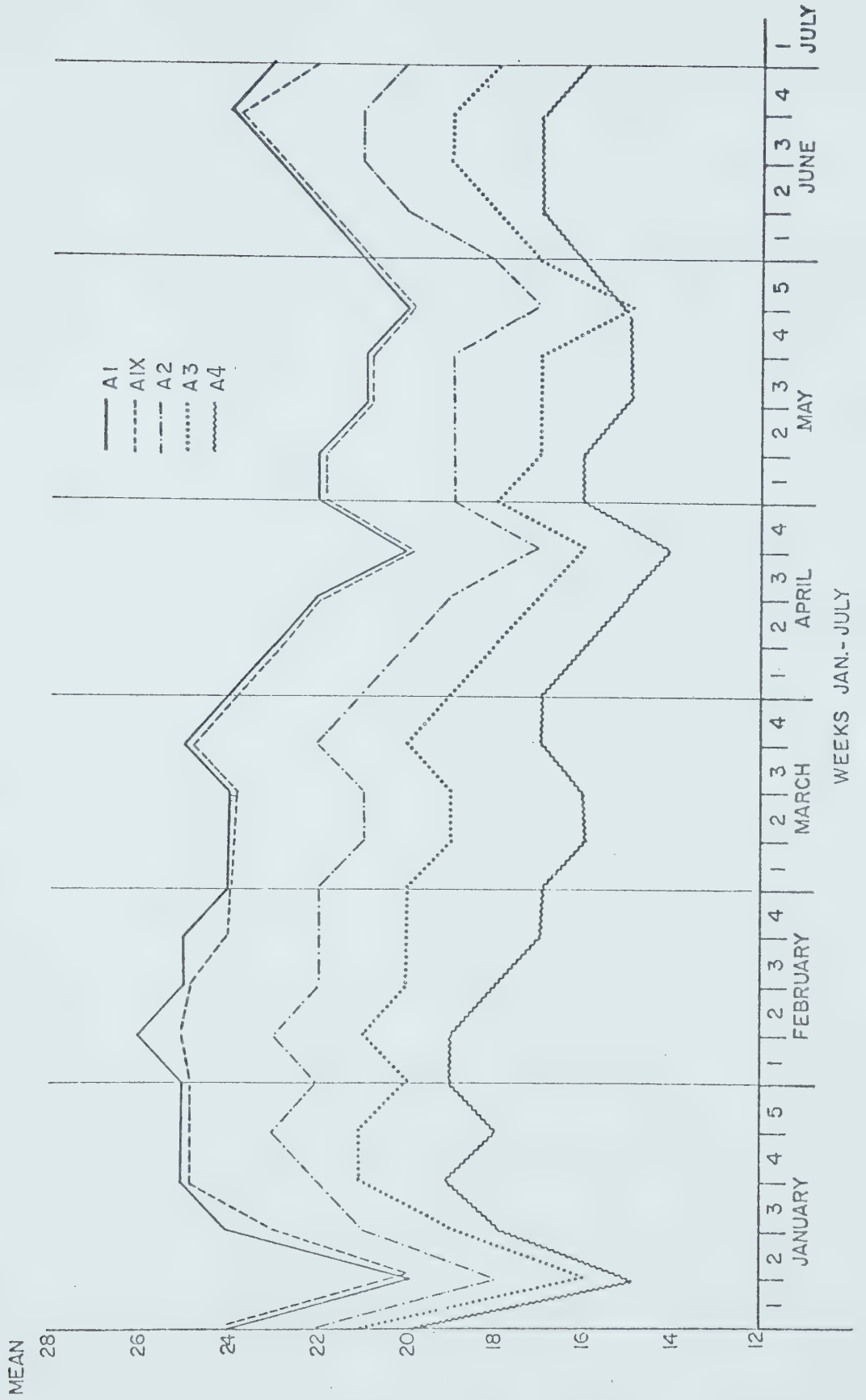


FIGURE 4.2
RETAIL GROSS MARGINS, CALGARY, JAN. TO JULY, 1973

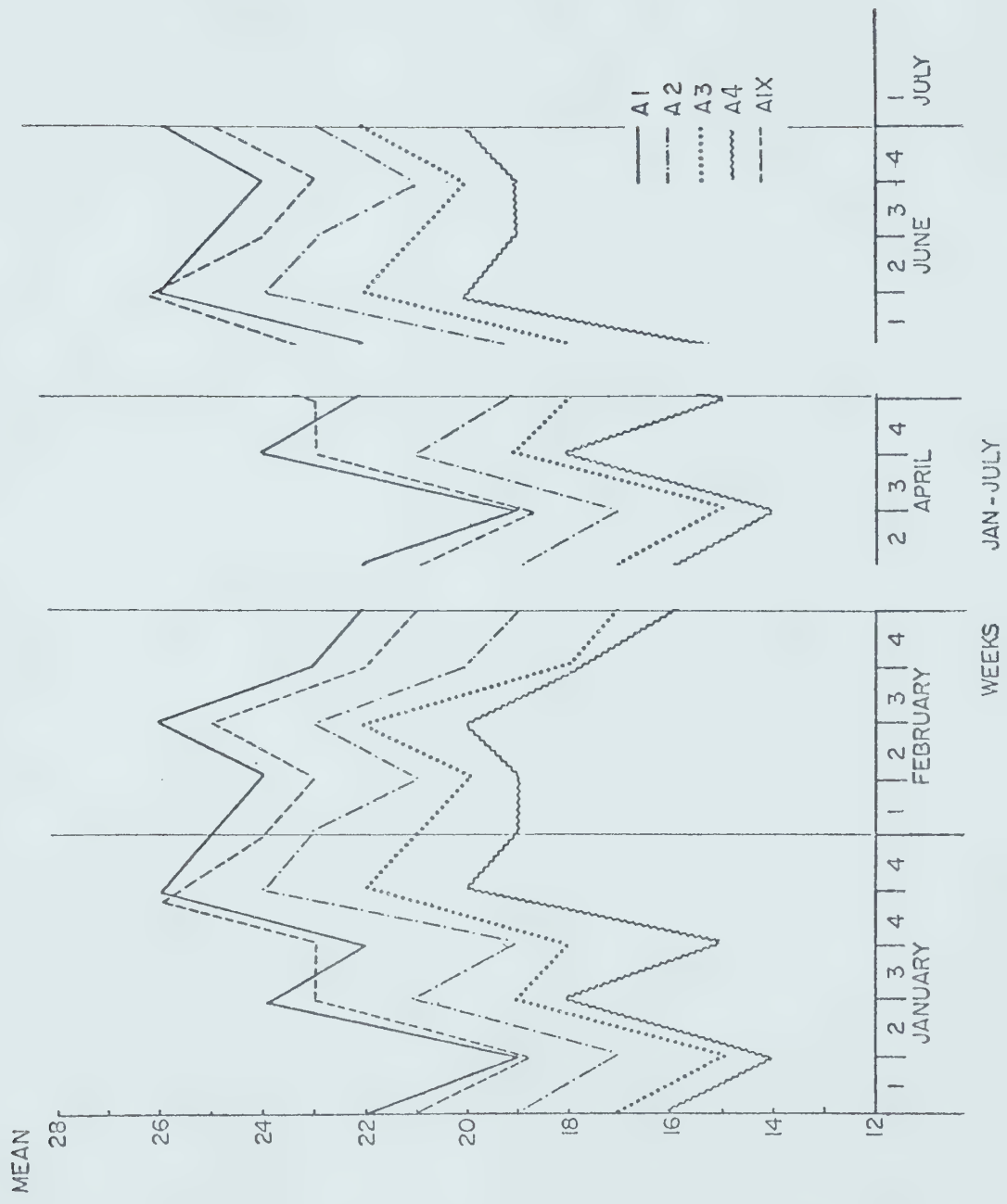


TABLE 4.8

WHOLESALE DRESSED MEAT PRICES (STEERS)

Southern Ontario

Grade	January					February					March					April					May					June		
	3	10	17	24	31	7	14	21	28	7	14	21	28	4	12	18	25	2	9	16	23	30	6	13	20	27		
A1	71.81		71.75	72.36	72.68	72.64	72.96	73.54	73.61	73.92	74.21	75.36	76.21	76.13	76.67	76.13	76.00	76.42	76.50	77.20	78.70	80.91	81.17	80.50	79.67	79.25		
A1X*	69.31	69.25	70.18			70.14	70.46	71.04	71.11	71.42	71.71	72.86	73.71	73.63	74.07	73.50	73.63	73.92	74.00	74.70	76.20	78.41	89.67	77.17	78.00	76.75		
A2	71.81		72.00	72.58	72.68	72.64	72.96	73.54	73.61	73.88	74.21	75.08	76.21	76.35	76.67	76.13	75.75	76.33	76.25	77.20	78.67	80.91	81.17	80.50	79.63	79.20		
A3	70.58	70.64	71.33			71.25	71.40	71.88	72.00	72.75	72.96	74.55	75.00	74.71	75.33	74.58	74.19	74.74	75.13	75.63	77.10	79.35	79.20	77.83	77.38	77.38		
A4	69.05	69.25	70.50			69.50	70.25	71.00	72.00	72.00	72.75	73.75	75.00	74.00	74.20	73.75	73.50	73.50	73.25	74.50	76.63	76.80	76.75	76.50	76.50	76.00		

Calgary

A1	70.00	70.04	70.70	70.30		70.25	69.75	69.55	71.06	71.92	71.87	72.75	73.72	73.71	73.81	73.99	73.94	75.26	75.59	77.51	79.58	80.19	79.29	77.21	76.75
A1X*	67.50	67.54	68.20	67.80		67.76	67.25	67.20	68.56	69.42	69.32	70.25	71.12	71.21	71.31	71.49	71.44	72.76	73.09	75.01	72.75	77.69	74.79	74.71	74.25
A2	69.37	69.71	70.29	70.10		69.79	69.58	69.50	70.68	71.57	71.62	72.75	73.51	73.71	73.59	73.90	73.86	74.77	75.30	77.18	79.14	79.74	79.21	76.93	76.46
A3	67.40	67.91	68.45	68.03		68.07	67.63	66.75	68.95	69.53	69.34	68.92	71.63	71.88	72.00	72.15	72.25	72.90	73.36	75.68	77.55	78.35	77.18	75.00	74.17
A4	64.92	65.28	65.99	65.51		65.98	65.63	65.50	65.78	67.12	66.65	68.00	69.90	68.75	69.75	69.75	69.75	70.75	70.75	72.75	75.25	76.33	76.25	73.25	72.50

* ALX was estimated at 2.50 below price quote for A1.
Source: Meat-Livestock Trade Report, Agriculture Canada, Weekly Publication.

TABLE 4.9

AVERAGE WHOLESALE AND RETAIL PRICES AND RETAIL MARGINS FOR
TORONTO AND CALGARY MARKETS (JANUARY TO JULY, 1973)

TORONTO¹

Grade	Wholesale		Retail			
	Wholesale Price	Difference From A1	Retail Value	Difference From A1	Retail Margin	Difference From A1
	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.	¢/lb.
A1	75.85		98.94		23.09	
A1X	73.35	-2.50	95.27	-2.67	22.92	-0.17
A2	75.84	-0.01	96.11	-2.83	20.27	-2.82
A3	74.33	-1.52	92.81	-6.13	18.48	-4.61
A4	73.17	-2.68	89.65	-9.29	16.48	-6.61

CALGARY²

A1	72.86		96.07		23.21	
A1X	70.36	-2.50	93.21	-2.86	22.85	-0.36
A2	72.55	-0.31	93.32	-2.75	20.77	-2.44
A3	70.61	-2.26	89.66	-6.41	19.05	-4.16
A4	68.34	-4.52	86.05	-10.02	17.71	-5.50

¹Data available for 25 weeks.

²Data available for 16 weeks.

The mean differences between grades for retail margin were tested for significance using Duncan's test for comparison between ordered means. At the 95 percent level of significance, A1 and A1X are not different statistically from one another for every week tested in both cities. Of the twenty-five weeks tested in Toronto, A2's and A3's were significantly different for sixteen weeks. Of the sixteen weeks tested in Calgary, A2's and A3's were significantly different four times, and A3's and A4's were significantly different for three of the weeks. All other combinations of grades were significantly different at the 5.0 percent level of significance.

In Table 4.9 wholesale and retail prices are averaged by weeks, for those weeks where both sets of prices were available. Average differences from the A1 price for the other grade categories are noted. Wholesale beef prices did not reflect differences in retail value among the new cutability grades as indicated by the fact that wholesale price differences between grades were much narrower than retail value differences. For example, A2 carcasses yielded 2.83 and 2.75 cents per pound less than A1 at retail but were essentially priced equally at wholesale. The differences from A1 in wholesale price per pound were prices actually quoted, while the differences from A1 in retail price reflect the differences necessary for the retailer to have equal margins for each grade category. Wholesale price differentials between grades would have to be much wider than those found for the period under study in order for the retailer to achieve equal margins on all grades. On the Toronto market, A4's were worth 9.29 cents per pound less than A1's, although the average difference in wholesale price over the period was

2.68 cents per pound. For Calgary the comparable figures were 10.02 and 4.52 cents per pound respectively. Differences among grade categories in retail value were fairly consistent for the two market areas.

Based on the results of this study and on prices in effect from January to July of 1973, a retailer could expect approximately 2.5 cents per pound less margin on an A2 than on an A1; for A3 the difference would be approximately 4 cents and for A4 approximately 6 cents per pound. A1X was the only category priced at wholesale to return equal margin at retail when compared to A1.

The study indicated that approximately one year after the establishment of the new grades the beef wholesaling-retailing sectors of the industry had not established wholesale carcass prices reflecting retail cutability or retail carcass value. However, one should make a cautionary statement that this conclusion is based on very specific, standardized retail cutting procedures. Any modification of cutting and trimming procedures could lead to different results. It also does not consider the possibility that retailers may price cuts from various grade categories differently.

Summary and Conclusions

The study was designed to align itself with the situation faced by the average meat retailer. He very seldom is allowed the privilege of buying all his carcasses within one cutability group, and in terms of expected retail yield (retail value) is concerned with the accuracy of the new grades. He has several meat cutters, and most often several store locations, which have the goal of maximizing their return from each beef carcass purchased. The key to the value of the cutability

standards introduced in the new grades is with their value to the retailers. This study was designed to assess the accuracy and implications of the cutability classifications introduced by the new beef grading system on September 5th, 1972.

One hundred and sixty three carcasses from regular A grades (A1, A2, A3, A4) and from an unofficial grade A1X (used by the trade to designate dairy-type) were cut to standardized, retail specifications and valued according to retail prices obtained by surveys.

Retail cutability (which included standard bone-in retail cuts, plus ground beef and stewing beef) was determined for each grade category. From A1 to A4, average cutability decreased by 7.6 percentage units. Differences in average cutability between each of the regular A grades were statistically significant. The A1X grade had a cutability similar to that for the A2 and significantly less than the A1. Large variation existed within grade categories ranging from 8 to 10 percentage units, indicating that cutability grade was not reliable for estimating cutability of individual carcasses. However, averages for groups of carcasses within a category would show less variation.

Fat trim accounted for the major differences in cutability between grades; bone trim generally decreased as fat trim increased. Differences in cutability between A1 and A1X reflected more bone (0.7 percentage units) and more fat (0.8 percentage units) in the latter category.

The reliability of certain carcass measurements for estimating cutability was examined. The sum of three fat measurements at the point of ribbing was the most reliable predictor of retail cutability.

However, the minimum fat measure used in grading was not appreciably lower in predictive value. Inclusion of hot carcass weight and rib-eye area with the fat measurements did not improve the accuracy of estimating cutability.

A comparison of wholesale and retail prices in two market areas (Toronto and Calgary) indicated that wholesale prices did not reflect retail value differences among the grade categories based on the cutting and pricing procedures of the large retail outlets. Retail value differences below A1 were 2 to 3 cents per pound for A2, 6 to 7 cents for A3, and 9 to 10 cents per pound for A4. Wholesale prices were similar for A1 and A2; A3's were discounted 1.52 cents per pound in Toronto and 2.25 cents in Calgary; A4's were discounted 2.68 and 4.52 cents per pound in the two markets respectively over the period under study. A1X was priced reasonably accurately when compared to A1 at a discount of 2 to 3 cents per pound wholesale.

The study indicated that approximately one year after the establishment of the new grades, the beef wholesaling-retailing sectors of the industry had not established wholesale carcass prices reflecting differences in retail cutability among the A grade categories. The differentials in effect during the study would indicate progressively lower margins for retailers from the A2, A3 and A4 grades compared to those from the A1.

If the fatter grade categories were discounted more by the retailer, the packer would probably reflect the lower value back to the producer. This could mean a higher price for the leaner animals or a lower price for the fatter animals or some adjustment for both

groups. Probably the price to the consumer would not be affected, unless more accurate differential pricing led to improvement in the retailer's profit.

The study was based on chain store cutting procedures and any modification of cutting and trimming procedures could lead to different results. As contrasted to the standard values used for calculation in this report, it is also possible that retailers may price cuts from the various grade categories differently. Also, some sectors of the industry including the hotel and restaurant trade, may favor carcasses with greater finish.

CHAPTER V

THE ECONOMIC LOGIC AND STATISTICAL BACKGROUND LEADING TO THE NEW BEEF GRADES

Introduction

The primary objectives of this chapter of the study are to outline briefly the economic reasoning behind the introduction of the new beef grades, to provide a statistical background of the beef industry, including supply and demand considerations, and to summarize briefly the changes in the distribution of beef grades since the new beef grades were introduced.

Economic Objectives of Beef Grading

Beef grading involves the division of the total number of beef animals slaughtered into various homogeneous groups. The groups are considered homogeneous because of arbitrarily defined characteristics which they have in common. The difficulty with beef grading has been with establishing arbitrary characteristics which can be accurately identified and which in turn reflect consumer preference.

The two main objectives of grading are:

1. To increase operational efficiency, or to reduce marketing costs.
2. To increase pricing efficiency, or to improve the market's ability to accurately establish prices.

It is through the increased operational efficiency developed from improved grade classification that firms in the beef industry can reduce the cost of marketing their product. This can result from a combination of many factors:

1. Increasing the extent of buying and selling by description.

2. Eliminating time and expense associated with arguments regarding quality.
3. Increasing the market potential of suppliers previously operating on a local or regional basis and permitting them to sell most advantageously in a national market.
4. Widening the procurement territory of large-volume wholesalers and retailers and permitting them to sell most advantageously in a national market.
5. Encouraging specialization among suppliers by function, type of product handled, and type of outlet.
6. Reducing the pressure among suppliers for large expenditures on competitive brand advertising.
7. Affecting the location of the processing industry by encouraging the shift of functions such as slaughtering and packing from areas of primary consumption to areas of concentrated production and thus affecting transportation costs.
8. Increasing the emphasis on technological innovation, improving marketing practices, and other means of reducing cost through intensifying competition on a price basis.¹

These are effects which tend to reduce cost, but whether or not they become benefits derived from the grading of beef depends on the accuracy and acceptability of the grade standards to all sectors of the industry.

Given an unlimited supply of resources it would be possible to divide beef carcasses into a reliable and acceptable set of grades. The conflict arises because the selection of grades must be done at a cost acceptable to society. The consumer will pay only a reasonable amount more for an acceptably graded product. In Canada, where beef grading is provided as a government service, discerning how the cost of grading

¹Williams and Stout, Economics of the Livestock-Meat Industry, p. 468.

should be allocated is a very complex issue. It is also a contentious issue with regard as how the increased costs of improving the efficiency of a grading system are to be allocated to the various sectors of the industry; i.e., it is alleged that the packing plants have increased handling costs with the new grading system and yet industry structure does not automatically assure them that they will benefit from the new grades.

Beef grades in Canada have for many years been a basis for price settlement and a factor in increased price efficiency. The value of such grade price relationships varied in accordance with various selling practices but, in total, government grades have remained an important part of price settlement for the industry.

When economic policy issues on beef grading are considered within the context of beef grading issues, seeking a benefit for the industry as a whole is often cited as a goal. A conflict of interest is inevitable, as not all can benefit.

It is assumed often that to be worthwhile grading must result in some "net social gain", but "best interests" of industry and "net social gain" are not easily determined. It seems clear that any action or program which injures no one and helps someone definitely is in the public interest. In any general industry program, however, someone, almost inevitably, will be injured. Under these conditions, economics alone cannot provide a final unequivocal determination of whether or not the proposed action or program is in the public interest. Economics can, however, point out and, in some instances, predict the individuals or groups that are hurt and those that are helped.¹

The implications of the new beef grading system are many and complex. The limited research available on the structure and conduct of

¹Ibid., p. 471.

the Canadian beef market made it difficult for this study to deal in anything but general terms. The nature of supply and demand considerations, Canada's growing import and export business for live cattle and beef and the regional transportation situation within Canada make this type of market description important to the study.

Supply and Demand Relationships for Carcass Beef in Canada

Production Areas and Supply Characteristics

The principal supply sources of carcass beef in Canada are from slaughterhouses in Ontario and the Prairie Provinces (Table 5.1). More specifically, 72 percent is divided equally between Ontario (Toronto) and Alberta (Edmonton, Calgary and Lethbridge), with 16 percent originating from Manitoba (Winnipeg). The remaining 12 percent of beef carcasses originate in Saskatchewan (6 percent) and Quebec (5 percent) and a few animals are killed in B.C. or the Maritimes (1 percent).

The percentage of cattle slaughtered in Ontario has remained relatively stable (approximately 30 percent) for the period 1950 to 1973. In Alberta, slaughter has increased from 15.9 percent to 38 percent of the total for the same period. The cattle feeding industries which support the Ontario and Prairie Provinces slaughter markets are not the same in structure. Ontario feeders rely on corn silage and a combination of U.S. feed corn and soybeans while Western Canadians feed cereal grain to prepare their animals for slaughter. In Ontario, the majority of beef herds are small and the resulting calves are either fed for slaughter in what is referred to as "farm feedlots" or in large feedlots which handle purchased calves. Western feeders use a high proportion of locally grown feed grain as their principal input. In recent years a

TABLE 5.1

REGIONAL TRENDS IN CANADIAN SLAUGHTER
IN INSPECTED PLANTS, 1941 TO 1971

Year	Ontario	Alberta	Prairie Provinces	Canada
1941-45	30.8%	14.4%	47.9%	1.23 million head
1946-50	28.4	20.1	47.8	1.43
1951-55	35.2	15.9	40.7	1.44
1956-60	34.2	20.8	44.6	1.89
1961-65	34.9	27.8	50.0	2.27
1966	34.4	30.1	35.4	2.71
1967	33.2	32.0	54.9	2.64
1968	32.7	32.3	54.7	2.78
1969	33.8	31.7	51.8	2.72
1970	33.3	33.1	54.4	2.70
1971	33.0	36.4	57.3	2.79
1972	32.1	38.8	60.0	2.88
1973 (June 30)	33.0	38.2	58.7	1.44

Source: Statistics Canada, Catalogue No. 23-203 and Agriculture Canada, Canada Livestock and Meat Trade Report.

strong feeder cattle industry supplying 500 to 700 lb. cattle to commercial feeding operations has developed on the Prairies.

Using total beef cattle numbers on farms as a proxy for major calf production areas (Figure 5.1), it can be seen that the Prairie Provinces have the largest share. The beef cow herd in Ontario is not sufficient to support the feedlot industry in that province. The deficit is made up primarily of calves imported from the Prairies.¹ A study in 1972 indicated that various packing firms are increasing their facilities in Alberta because of its apparent long run cost advantages of being in the center of the calf and the grain production areas.²

The type of animals slaughtered in various regions across Canada is not the same (Table 5.2). The principle slaughter areas of Ontario and Alberta have had the highest percentage of their carcasses falling into the A grade, whereas Quebec had 83 percent of its total kill as cows. Distribution between grades in other areas indicates the diversity in the type of beef carcasses available within various regions.

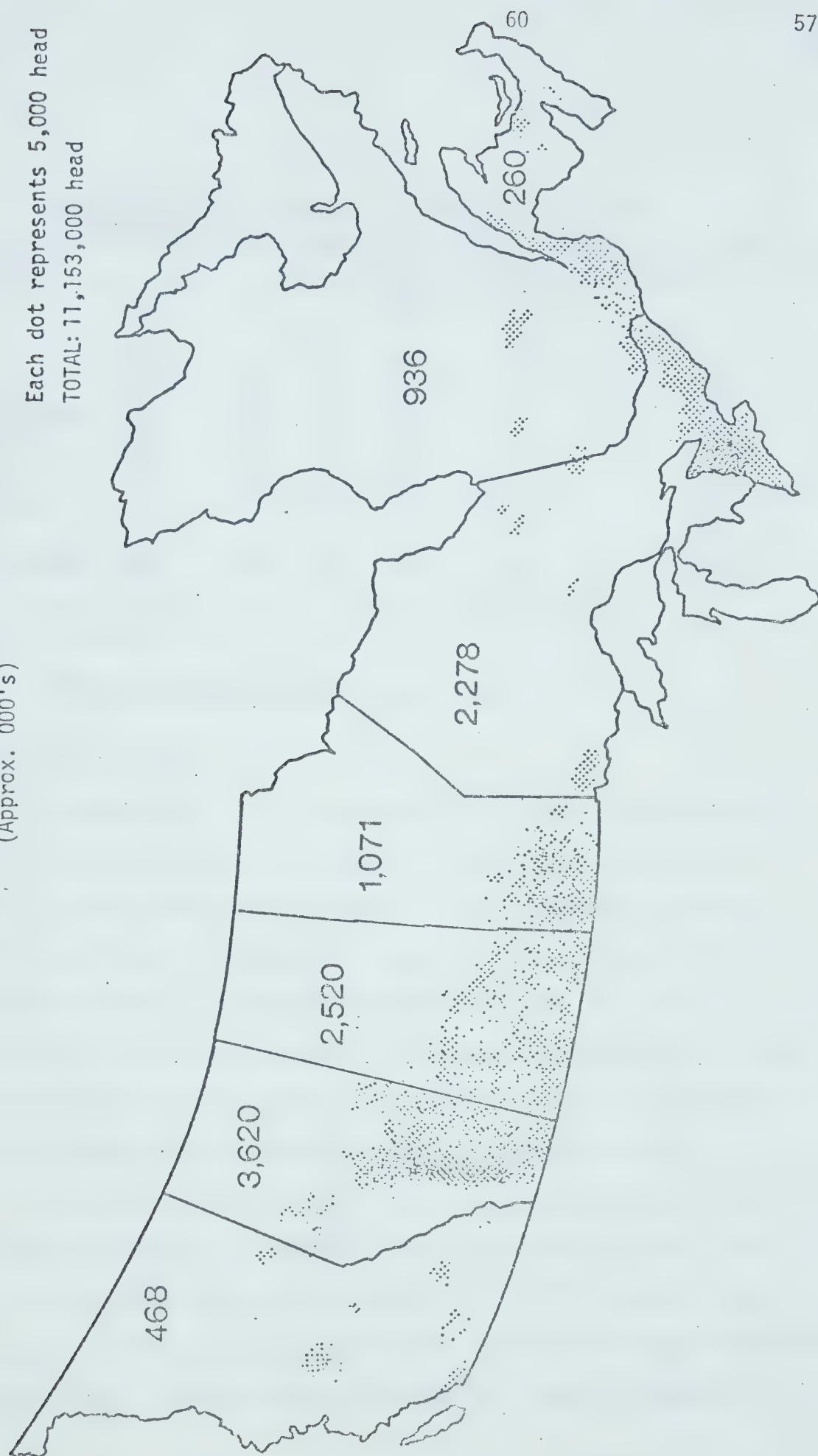
Alberta has over 80 percent of its slaughter falling within the A grade. This is in contrast to the other Prairie Provinces which averaged 65 percent. For the period considered, Alberta produced approximately 300,000 A grade carcasses, Ontario produced 227,000, and the total other provinces combined produced 200,000.

¹ Quantz, Futures Trading in Live Beef, p. 27 .

² McLean-Bullen, Beef Packing: Location and Operation, p. 117 .

FIGURE 5.1

TOTAL CATTLE NUMBERS IN CANADA, 1971
(Approx. 000's)



SOURCE: Statistics Canada, Livestock and Animal Products Statistics, Cat. No. 23-203 (Ottawa: DBS).

TABLE 5.2

GRADE CATEGORIES BY REGION IN CANADA AS PERCENTAGE
OF SLAUGHTER, SEPT. 5 TO DEC. 30, 1972. AVERAGE

Province	Grade (Percentage by Region)				
	A	B	C	D(Cows)	E(Bulls)
B.C.	66.3	4.9	3.9	24.0	9.0
Alberta	80.5	1.7	2.2	14.6	0.9
Saskatchewan	67.1	6.5	5.0	18.3	3.1
Manitoba	65.7	4.1	4.0	24.1	2.1
Ontario	72.1	5.1	5.3	15.5	1.5
Quebec	7.3	1.2	2.5	82.9	6.1
Atlantic	12.8	10.7	26.1	47.6	1.8
Total Canada	69.2	3.5	4.1	21.4	1.8

*Total Slaughtering in inspected plants September 5 to December 5, 1972.

Source: Canada Livestock and Meat Trade Report.

Demand Considerations

The demand for beef in Canada has been increasing continually over the past twenty years. Both total and per capita consumption (Table 5.3) have continued to increase. Of the total meat consumed, beef has continued to represent the largest share. The upper half of the table shows that, except for the period 1951-55, per capita consumption of beef has continuously increased and reached 92.5 lbs. per person in 1972. Even during the 1945-49 years when total consumption of meat decreased, the consumption of beef continued to rise.

During most of the period of increasing beef consumption, beef meat remained the highest priced of all types of meat available (Table 5.4). In 1967, the index price of beef was 124.2 or 6.4 points higher than pork. In 1973 (June), it had an index of 178.5 which was 22.7 points higher than pork. Canadian demand for beef has tended to parallel U.S.

TABLE 5.3

TRENDS IN PER CAPITA CONSUMPTION OF RED MEATS
IN CANADA, 1935 TO 1972

Year	Beef	Pork	Lamb & Mutton	Canned Meats	All Meat
----- pounds * -----					
1935-99	54.7	39.9	5.6	1.4	117.8
1940-44	60.5	56.0	4.3	1.9	140.0
1945-49	63.3	50.3	3.7	3.3	136.6
1951-55	61.6	51.6	2.3	5.4	133.8
1956-60	69.3	50.5	2.8	5.4	140.7
1961-65	75.8	50.2	3.5	4.3	145.0
1966-70	85.4	52.6	3.8	4.5	156.0
1971	86.9	65.9	3.3	-	164.8
1972	92.5	61.1	4.6	-	165.8
----- percent -----					
1935-39	46.4	33.9	4.8	1.2	100
1951-55	46.0	38.6	1.7	4.0	100
1961-65	52.3	34.6	2.4	2.9	100
1966-70	54.7	33.7	2.4	-	100
1972	55.8	36.9	2.7	-	100

* Cold dressed carcass equivalent

Source: Statistics Canada, Catalogue No. 32-220.

TABLE 5.4

INDEX RETAIL PRICES FOR MEAT, 1967 TO 1973
(1961=100)

Year	Beef	Pork	Poultry	Other Meats
(1961=100)				
1967	124.2	117.8	106.6	120.5
1968	126.3	116.8	109.6	121.5
1969	136.7	130.6	109.2	128.6
1970	140.7	128.1	105.9	135.6
1971	144.4	109.6	108.9	133.1
1972	157.6	132.4	124.6	146.6
1973 (June 30)	178.5	155.8	147.1	166.1

Source: Statistics Canada, unpublished reports.

TABLE 5.5

ESTIMATED PER CAPITA CONSUMPTION OF BEEF BY PROVINCE, 1960-1971^a

Year	Maritimes	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
(lbs.)								
1960	53.3	63.0	79.7	70.3	65.9	70.0	78.9	70.0
1961	55.8	66.4	81.4	69.1	54.4	71.5	80.3	70.5
1962	52.8	64.0	79.7	70.6	67.7	70.4	77.8	71.1
1963	56.7	67.6	84.8	72.5	76.0	74.8	82.6	74.3
1964	61.1	72.6	88.8	77.8	69.7	78.7	87.5	79.4
1965	64.1	77.4	93.5	81.1	79.3	83.4	92.3	83.6
1966	65.1	78.7	95.7	82.4	83.4	85.5	93.3	84.1
1967	64.3	77.4	93.7	83.0	73.0	83.4	90.0	84.0
1968	67.3	79.3	95.5	87.7	80.9	85.7	90.5	87.7
1969	68.9	80.8	97.3	86.7	81.2	87.0	91.3	88.2
1970	70.2	81.5	97.3	86.5	71.3	87.0	91.3	85.7
1971	70.6	83.1	98.0	85.6	73.5	88.0	91.3	86.9

^aEstimated by the regression technique.Source: McLean-Bullen, A.J., Beef Packing: Location and Operation, p. 48.

demand for beef with approximately a ten-year time lag, and this would be a further indication of increasing demand for beef in the future as Canadian per capita consumption would then be in excess of 120 lbs. per person by 1982.

In 1972, 76 percent of Canada's population was urban, making the few large urban centers the principle demand areas for beef. A study in 1972 used average per capita consumption data, the all-item consumer price index, consumer price indices for beef and pork, personal disposable income, and population to estimate regional beef consumption patterns in Canada (Table 5.5). Ontario was estimated to have the largest per capita consumption. This fact would imply that the large urban centers in Southern Ontario would be the largest demand centers for carcass beef in Canada. Quebec had the third lowest consumption level but the second largest population. Montreal has approximately one-quarter of that population, thereby becoming the center of the second largest beef carcass market. The table shows British Columbia as having the second highest beef consumption level and this would imply that the lower B.C. mainland would be the next largest demand center.

The Import-Export Picture

The beef industry in Canada has been in a net import position for beef since 1969. A strong import-export industry for fresh and frozen beef has developed over the last few years (Tables 5.6 and 5.7). Exports principally move to the U.S. and are composed of boneless processing meat shipped from the province of Quebec into the large population areas along the eastern coast of the U.S.A. Industry representatives indicated that virtually no fresh carcass beef was exported from Canada.

TABLE 5.6

BEEF EXPORTS BY TYPE OF PRODUCT, 1961-71

Year	Fresh Chilled or Frozen	Pickled in Barrles	Other	Total
(thousand lbs.-dressed carcass)				
1961	34,224	2,244	1,068	37,536
1962	24,660	1,782	1,214	27,656
1963	21,796	2,425	1,343	25,564
1964	38,065	3,122	1,583	42,770
1965	95,822	4,641	1,830	102,293
1966	73,666	3,503	1,583	78,752
1967	43,273	2,782	1,589	47,644
1968	74,100	4,442	1,788	80,330
1969	77,035	4,029	1,748	82,812
1970	137,043	5,937	2,155	145,135
1971	135,415	5,202	2,319	142,936

SOURCE: Statistics Canada, Livestock and Animal Products Statistics, Cat. No. 23-203 (Ottawa: DBS, 1971).

TABLE 5.7
BEEF IMPORTS BY TYPE OF PRODUCT, 1961-71^a

Year	Fresh Chilled ^b or Frozen	Pickled in Barrles	Canned	Other ^c	Total
(thousand lbs.-dressed carcass)					
1961	16,402	14,743	24,327	89	55,561
1962	23,128	14,563	19,498	95	57,284
1963	24,195	14,856	24,642	97	63,790
1964	13,879	14,613	19,211	107	47,810
1965	7,335	11,654	19,544	121	38,654
1966	14,520	14,703	19,161	134	48,518
1967	29,806	18,098	25,320	189	73,413
1968	27,819	15,219	19,617	159	62,814
1969	148,627	11,579	30,288	132	190,626
1970	185,171	11,363	26,357	116	223,007
1971	129,186	14,362	19,153	85	172,786

^aIncluding imports subsequently exported.

^bIncludes veal, fresh, chilled or frozen.

^cEstimated beef content of sausage.

SOURCE: Statistics Canada, Livestock and Animal Products Statistics, Cat. No. 23-203 (Ottawa: DBS, 1961-1971).

TABLE 5.8

TRENDS IN PRODUCTION AND INTERNATIONAL TRADE
IN BEEF AND VEAL MEAT, CANADA, 1951 TO 1972

Year	Slaughter*	Imports	Exports*	$\frac{\text{Imports}}{\text{Slaughter}} (\%)$	$\frac{\text{Exports}}{\text{Slaughter}} (\%)$
1951-55	1,084.7	15.1	45.9	1.3	4.2
1956-60	1,343.1	26.8	38.8	2.0	2.9
1961-65	1,623.5	30.4	47.5	2.0	3.0
1966	1,898.0	25.4	78.8	1.2	4.1
1967	1,887.3	39.9	40.7	2.3	2.3
1968	1,990.0	35.8	68.1	1.9	3.7
1969	1,801.3	110.9	67.7	6.2	3.8
1970	1,805.8	170.3	118.7	9.4	6.6
1971	1,836.6	153.2	113.6	8.3	6.2
1972	1,898.3	213.7	83.8	11.2	4.4

* Million pounds.

SOURCE: Statistics Canada, Cat. No. 32-220.

From 1951 until 1972, beef imports increased from 15 million pounds to 214 million pounds, with a large percentage of increase explained by beef entering in the fresh or frozen form. For the same period beef exports have increased from 46 million to 84 million pounds. A large percentage of this increase is also explained by exports in fresh or frozen form.

Table 5.8 also shows the increase in imports as a percentage of slaughter (1.3 percent to 11.2 percent) over the period 1951 to 1972. The total Canadian slaughter in 1966 is identical to the total slaughter in 1972 while imports for the same period have increased from 25.4 million pounds to 213.7 million pounds. It should be noted that the rate of this trend is increasing, indicating that at best Canada will remain a beef importing country for the next several years.

Canadian imports of beef arrived principally from Australia and New Zealand (Table 5.9). They are principally processing meats for the hamburger pattie and sausage industries.

Details obtained during the research study found that a noticeable volume of wholesale cuts (mainly ribs, loins, tenderloins and top rounds) were continually being imported from the U.S. for the hotel and restaurant trade. The trade, particularly the expensive restaurants, demand heavy loins and ribs which must come from carcasses weighing over 700 pounds (over 1200 lbs. live weight) and carrying considerable finish and marbling. Canadian producers are not marketing many cattle meeting these specifications. This appears to be the case because the price discovery process under both the old and the new grading system tends to penalize heavy carcasses. The beef marketing and production structure

TABLE 5.9

BEEF IMPORTS BY COUNTRY OF ORIGIN, 1961-71^a

Year	United Kingdom	United States	Country of Origin						Total	
			Australia	New Zealand	Argentina	Brazil	Paraguay	Uruguay		Other Countries
				(thousand lbs. - dressed carcass)						
1961	9	19,833	15,853	8,078	8,997	--	1,930	535	326	55,561
1962	16	18,420	23,744	9,241	4,322	--	1,242	207	92	57,284
1963	33	17,731	22,659	11,684	7,323	214	2,534	751	861	63,790
1964	336	18,846	13,602	4,829	6,083	435	1,417	321	1,941	47,810
1965	463	14,294	11,500	2,036	4,533	1,817	1,389	1,388	1,234	38,654
1966	431	20,372	11,346	3,579	5,083	3,105	2,106	125	2,071	48,518
1967	1,108	27,722	15,230	7,308	13,558	2,345	2,779	654	2,630	73,413
1968	1,409	19,908	18,136	8,406	10,507	1,592	831	1,069	956	62,814
1969	1,500	17,291	45,241	103,330	17,406	143	3,718	178	1,817	190,626
1970	1,729	18,953	78,311	102,516	11,982	6,975	926	--	1,615	223,007
1971	1,834	34,742	37,576	85,286	2,417	6,871	2,822	--	1,238	172,786

^aIncluding canned beef and imports subsequently re-exported.

Source: Statistics Canada, Livestock and Animal Products Statistics, Cat. No. 23-203 (Ottawa: DBS, 1971).

in Canada has been primarily organized to produce carcasses suitable for the high volume retail supermarket distribution trade. Only secondarily does it attempt to fill the "HRI" trade as a residual, thus leaving open a sizeable market for imported beef cuts from the U.S. and the use of preformed, tenderized beef from Australia. The new cutability grades would appear to have had little effect on improving this situation.

Transportation and Beef Carcass Movements Within Canada

Transportation is a major factor to the beef industry in Canada. The majority of interregional beef movements in Canada have their sources from within Canada and the large U.S. market serves mainly as an arbitrage. Therefore the U.S. market has a strong influence on Canadian beef prices but the Canadian transportation system has historically held interregional beef trade primarily to within Canada.

Table 5.10 outlines estimated surplus and deficit regions for beef in Canada. The largest consumption region, Ontario, has a small deficit, and Quebec, which had virtually no beef production, had a deficit of almost 400 million pounds. In 1971, the Prairie Provinces were the only regions in Canada indicating a surplus of production, led by Alberta with 486 million pounds. There are large volumes of beef moving between regions in Canada and the interviews with industry representatives confirmed that West to East movements of beef carcasses had increased substantially in recent years.

The study indicated that the number of live cattle moving between regions for slaughter was rapidly decreasing and that the largest percentage of beef was moving in carcass form either by truck or rail. The few

TABLE 5.10

BEEF PRODUCTION ESTIMATED SURPLUS (+) AND DEFICIT (-) BY REGION, 1960-1971

Year	Maritimes	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
('000)								
1960	- 69.154	-225.277	- 59.637	+195.884	+17.052	+260.206	- 66.651	+ 18.545
1961	- 67.495	-238.108	- 63.203	+250.523	+40.227	+376.155	- 75.429	+187.774
1962	- 66.441	-233.391	- 35.992	+185.974	+28.996	+374.915	- 86.234	+131.710
1963	- 73.092	-255.836	- 32.681	+155.759	+17.032	+342.174	- 95.841	+ 19.101
1964	- 79.480	-280.979	- 42.611	+179.401	+18.774	+365.516	-103.052	+ 15.886
1965	- 81.218	-297.743	- 33.826	+308.242	+53.411	+530.304	-107.901	+327.046
1966	- 83.407	-341.060	- 70.603	+277.347	+57.986	+542.496	-111.688	+225.993
1967	- 88.967	-362.556	-111.406	+213.266	+26.913	+456.395	-115.667	- 27.709
1968	- 93.194	-370.914	-135.958	+245.824	+34.273	+537.193	-120.985	+ 36.554
1969	-105.317	-412.400	-126.466	+189.156	+25.959	+499.847	-144.902	-169.792
1970	-100.621	-381.711	-132.366	+180.717	+21.957	+455.679	-153.812	-168.747
1971	- 95.483	-393.640	-127.224	+172.346	+19.276	+486.630	-158.061	-142.968

Calculated from: Statistics Canada, Livestock and Animal Products Statistics, Cat. No. 23-203 (Ottawa: Queen's Printer, 1960-1970); Canada Department of Agriculture, Annual Livestock Market Review (Ottawa: Queen's Printer, 1960-1971); Statistics Canada, Canada Year Book (Ottawa: Queen's Printer, 1965, 1970-71).

Source: McLean-Bullen, Beef Packing: Location and Operation.

live cattle which do move from West to East are for small packing firms which require these animals at various times to keep their plants operating. The advantages of refrigerated railway and truck facilities resulted in most of the beef in Canada moving in carcass form.

The Montreal market is supplied almost exclusively by rail mainly from southern Alberta plants. The Ontario and B.C. deficits are supplied from the Prairies by a combination of both truck and rail.

An increasing number of carcasses are moving from the Western packing plants by what industry terms "drop shipments". Carcasses are loaded into refrigerated trucks so that individual orders can be left with several retail stores at the point of destination. The truck will travel to each store (usually eight to ten stores per truck), unload an order at each and return empty. This type of transportation is becoming a common method of moving carcasses from the surplus prairie regions to British Columbia and Ontario.

The transportation industry is a major factor in the beef industry in Canada. This is due to the large regional movements of beef between surplus supply areas and the large deficit regions. Industry representatives from the transportation sector indicated that the new beef grading system had no direct effect on their trade. It was the feeling that any transportation changes which would come in the future would be from structural changes in the beef market.

Early Trends Since the Changes in Grades

It is interesting to note that the major change in the beef market, which was observed from the statistics available at the time of the study, was the factor which led to the demand for a change in grading

policy in the beginning, i.e., the necessity to reduce excess fat on beef carcasses. The fat level of carcasses available on the market has been reduced (Figure 5.2). The increase in the percentage of A1 and A2 grades (less fat) with the decrease in A3 and A4 grades indicated that producers were selling their cattle with lesser amounts of fat cover within the first months after the grading change.

Fat level on beef animals is a manageable factor which producers can adjust within a short time by changing their feeding periods. The lower prices paid on the slaughter cattle market for the excessively fat (i.e., A4's) would appear to have encouraged this rapid change. As this was one of the major goals of the producers in negotiating for a grading change,¹ it would appear that the new grades influenced some success in this regard.

Concluding Comments

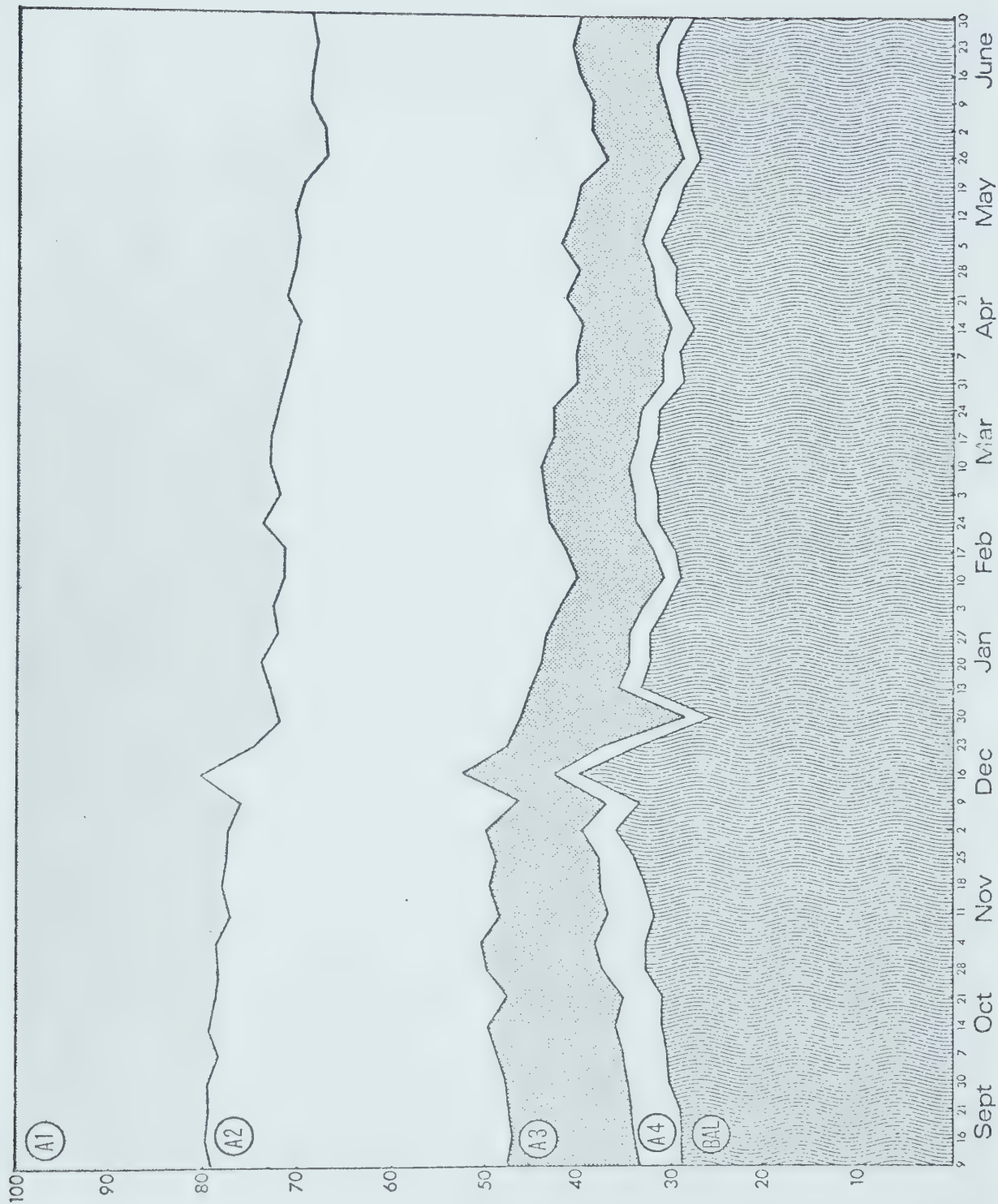
Aside from the straight forward economic rationale for an accurate beef carcass classification system which is necessary to facilitate the operation of a sophisticated and competitive beef marketing system, the economics of regional supply areas and distant consumption centres make it imperative that continued efforts be undertaken to further refine the beef grades.

The introduction of retail cutability factors and the resulting implications of the changes in fat levels leads back to the many complex issues which could be faced by the beef industry such as: retail acceptability of the leaner carcasses, lower "dressing-percentages" for the packing house industry, carcass storage and handling problems, and changed processing or production margins for various sectors of the industry.

¹ See Chapter II

FIGURE 5.2

CUTABILITY DISTRIBUTION WITHIN THE A GRADE,
SEPTEMBER, 1972 TO JUNE, 1973



These issues were included in the discussions with industry representatives and are incorporated in various parts of the next chapter.

CHAPTER VI

A SURVEY OF INDUSTRY VIEWS ON GRADING

Introduction

This section of the study had two main objectives:

- 1) To obtain views from a representative cross section of the industry on grading of beef.
- 2) To obtain information on structural changes which have occurred in the beef industry since the change in grading, and to search for opinions on changes expected to occur in the near future.

Interviews with senior representatives from all sectors of the beef industry were used in order to obtain as much first hand information as possible (reviews of available statistical and research materials were completed before the industry opinions were gathered). Although questionnaires had been previously prepared, the interviews were on a discussion basis. Open-ended questions were fully utilized to encourage the interviewee to express his opinion fully and to provide him with the opportunity to support his statements. All interviews were conducted with more than one interviewer.

The industry was separated into six major areas for analytical purposes. These were:

- 1) Independent live cattle dealers, cattle buyers employed by packing houses, commission agents, and terminal market firms.
- 2) Meat packing firms.
- 3) Beef carcass wholesalers.
- 4) Meat brokers.
- 5) Meat purveying firms.
- 6) Retail chain store

Interviews were conducted across Canada. As the number of firms involved in supplying large portions of the Canadian market is relatively small, it was possible to obtain a reliable cross section of industry opinion. Representatives from all firms were asked to substantiate their views so that controversial areas were fully discussed before being considered for inclusion in the study. Cooperation was received from all sixty-four firms visited in the study.

Live Cattle Buyers

Buyers of live slaughter cattle are basically interested in three things:

- 1) The grade the cattle will obtain when they are slaughtered.
- 2) The carcass weight as a percentage of the total live animal weight ("dressing-percentage").
- 3) The price paid to obtain certain volumes and certain types of cattle.

The change in the grading system was of major importance to the live cattle buyer.

The criteria used to grade carcasses are only partially distinguishable on the live animal and yet the buyer must accurately estimate the grade basis if he is to perform his job satisfactorily.

The dressing percentage of an animal is a function of many variables (fill, condition of hide, etc.) but a major determinant is fatness. The new grading system resulted in a premium for leaner cattle, but it is also known that these animals have, on the average, a lower dressing percentage. This is an additional problem to the live cattle buyer who previous to the new grades needed only to consider sex, weight, fat level and condition in estimating dressing percentage.

A United States study has revealed that a live cattle buyer faced with establishing a price on a group of cattle with his estimates on weight, grade, yield, etc., has a tendency to under value the cattle to protect his estimates.¹ The new beef grading schedule makes it more difficult for the cattle buyer due to the removal of conformation grading and the addition of the cutability classifications. If the conclusions of the study by Stout are carried into the Canadian scene, pricing efficiency within the market would be reduced, unless alternate methods of marketing slaughter cattle become common, e.g., rail grade.²

All the live cattle buyers questioned indicated that the new grading system had resulted in a reduction in the number of excessively fat cattle which were coming to market. They felt that the producers had reacted to price discounts for overfat cattle and as a result had been shipping their cattle earlier. Several terminal market buyers indicated that the number of underfinished slaughter cattle had increased on the market, but indicated that the majority of these animals were being resold as feeder cattle rather than being slaughtered.

The majority of live cattle buyers felt that they were having little difficulty in estimating the cutability grades on finished cattle. Several buyers indicated that some breeds were being unjustifiably discounted on live price with the introduction of the new standards.

¹Stout, Carcass Weight and Grade Pricing.

²For a discussion of pricing efficiency and marketing methods see: Hawkins, "Alternative Methods of Marketing Livestock," Canadian Journal of Agricultural Economics, Nov. 1969, p. 108.

The Angus or Angus crossbred cattle were often cited as a good buy on the feeder cattle market due to deflated prices.

Buyers agreed that prices for young finished bulls were relatively higher than under the old grading system. Several buyers indicated that they were purchasing these bulls at equal value with top grade steers.¹ "Dairy-type" steers and dairy crosses were a problem to the majority of buyers as grades were difficult to predict. They indicated that these cattle could be either graded A or B depending on the changing policies of the federal beef graders.² It was, however, generally agreed that the relative average live price for the "dairy-type" steers was higher with the new grading system.

All buyers interviewed indicated that live cattle prices between the cutability standards stabilized a few months after the grading system was established. The comments indicated that packing houses were cautious when the new system was first established and prices between classifications varied considerably during the first two months.

It was agreed that producers were not fully prepared for the new grades. The date of introduction of the system fell during a period of declining prices with producers holding back finished cattle for better prices. As a result, a larger than normal percentage of overfat cattle

¹These were conclusions drawn by buyers in the West as Eastern buyers felt that the young fed bulls were not common enough in the trade to comment.

²During the course of this study it was possible to observe a change in grading policy implemented by Agriculture Canada. With this change many carcasses of the "dairy-type" which had been previously included in the A1 grade were graded B1 on the "insufficient muscling" clause in the grading act. This is not in accordance with the Grading Act, which requires these animals to be graded as C under the clause, and not B.

were marketed shortly after the new grading system was implemented and these cattle were heavily discounted on live price. In addition, a surplus of A4 type cattle became visible in the U.S., thus further aggravating the problem.

All packer buyers indicated that no increase in rail grading had occurred since the new grading system was implemented. Several even indicated a small reduction in cattle sold on a rail grade basis. One national and two regional packers felt that producers were still being confused by the new grades and preferred not to trust the system of selling their cattle on the rail grade basis.

Firms operating on the terminal markets did not feel that grading had affected their slaughter cattle volume. The changes in total volume being delivered on the Eastern and Western terminal markets are at opposites --decreasing volume of slaughter cattle being delivered on Western terminals and increasing volume in the East -- but these market trends do not appear to have changed or have been affected by the new grading system. It was felt by many live cattle buyers that with the grading change the quality of market reporting had been reduced on the terminal markets. The comments indicated that market reporters were not able to estimate live cattle for cutability grading; thus reported prices were felt to be inaccurate.

Meat Packing Industry

As indicated in Chapter III, the packing firms, along with the producers, were most concerned with beef grading. The reasons for this concern are not ill-founded as the implication and impact of the beef grading changes would appear to be the greatest for the packers.

Grades in Canada were one of the major determinants of wholesale prices for beef carcasses. The packing houses were also the major wholesalers of beef carcasses in Canada; thus they were involved with prices in the "live" cattle market and in the wholesale beef market. Furthermore, they had full ownership of the beef carcass or live animal for a fairly lengthy period of time (approximately ten to fifteen days). Thus it can be expected that changes in grading standards and procedures could lead to changes in the pricing structure of the market and could conceivably place the packing houses in a difficult position.

Meat packing firms are also concerned with the handling and transportation problems imposed by the new beef grading system. Cooler space is the most limiting factor in packing house capacity in Canada,¹ and the partial ribbing or full quartering of carcasses for grading could limit the use of this space. Also the handling of carcasses within the coolers is more difficult when the sides are partially or fully ribbed. The results of the study by Iler, Locking and Usborne indicates the importance of these factors and points out that the new grades will impose some additional cost to the packing houses.

All the packing houses contacted agreed that the number of over fat cattle coming to slaughter had been reduced. As was expected, this resulted in a decrease in average dressing percentage of 2 to 3 percent on the cattle killed. Several meat packers expressed concern that underfinish was now a problem as the minimum fat requirements in the new grading system were considered to be too low.

There was mutual concern throughout the Western meat packing industry plants with the "dairy-type" steer carcass receiving an A grade.

¹McLean-Bullen, Beef Packing: Location and Operation, p. 91.

The opinions as to why this type of carcass was a problem varied considerably. The major points brought out included:

- 1) Insufficient muscling which meant that the retail yield was lower.
- 2) Insufficient fat cover on most of these carcasses, thus they would not age properly.
- 3) Lesser quality meat from a carcass of this type.
- 4) Strong retailer resistance to purchasing this type of animal.

This part of the industry agreed that the problem could be best solved by reintroducing conformation grading. They indicated that only a small portion of the dairy-type carcasses found in the A1 grade could be merchandized as sides or quarters. The majority had to be broken into primals to be merchandized. The wholesale price for this type of carcass in the A grade was usually two to three cents below the "beef-type" carcasses in the A grade, depending on the percentage being marketed at any one time.

In Ontario, meat packers as a group expressed little concern about A1X or dairy-type carcass grade. Many retailers in the non-corporate or affiliated chain groups preferred this type of beef and, provided it had an A stamp on it, they would not discriminate against it. In addition, there were sufficient numbers of distributive outlets which had handled dairy-type beef over the years that, unlike Western Canada where outlets were limited, there were few problems in selling it. Several meat packers said that the dairy-type carcasses were easy to dispose of after they were broken into wholesale cuts. They estimated that they needed a two to three cent discount to compensate for the breaking costs.

Specification buying of carcasses by grade has not increased in

the wholesale industry since the new grades, and several firms indicated that retail buyers were personally selecting more beef carcasses than previously. It was agreed that the introduction of cutability grading had made retail buyers more aware of fat cover and that several retail buyers were purchasing leaner carcasses (just A1's and A2's) than previously. The comments indicated that the extra selection done by buyers was due to their concern with quality (selecting out dairy-types and unacceptable types of carcasses) rather than concern with fat cover.

Knife ribbing was stated not to be a problem and several packing houses indicated that it was of benefit to their in-house sorting of carcasses. Half the firms visited indicated that the problem of identifying dark cutters was reduced due to ribbing, while the other half indicated that the frequency of the problem was unchanged. Several firms did indicate that what constitutes a dark cutting carcass is a subjective evaluation within the industry --what is a dark cutter to one firm is not a dark cutter to another.

It was stated by all packers visited that the graders were not measuring rib eye fat on every carcass graded. The concern was that several discrepancies were occurring when cutability grades were being applied. Several packing house operators took the interviewers into their coolers to demonstrate this problem and a considerable proportion of incorrectly graded carcasses were observed. This problem was later observed on a national basis.

The packing house industry in total felt that the new grading system was an improvement over the old. They indicated that the change had made their part of the industry more competitive but they were not

willing to disclose their reasons for feeling this way. Two dominant recommendations for improving the grading system were noted from the suggestions forwarded by this group: the reintroduction of conformation grading, and the establishment of a separate A grade for the "dairy-type" steer carcass.

Beef Carcass Wholesalers (Montreal)

As indicated earlier, Montreal is the center of the second largest consumer market in Canada. The structure of the market is different from the larger Ontario market in that virtually all of its fresh beef is imported from out of province. Thus it has developed a number of independent wholesalers, a centralized retail chain warehouse, an independent retail association warehouse, and packer branch houses, all competing within the same market.¹ The competitive situation makes beef grading of particular importance to the above firms operating in this market.

The wholesale price of beef in Montreal was usually the Montreal-delivered price from the Western markets plus three cents per pound for handling, storage, delivery, etc. In addition, the wholesaler received approximately a seventy-five cent per hundredweight refund on railway transportation charges.

All the wholesale buyers in Montreal have continually disputed with their Western suppliers on the matter of carcass quality. The national packers in the West have refused to allow the wholesalers to select their own beef before it was shipped. The Montreal wholesalers alleged that the supply of carcasses received were of lower than average

¹For a description of the Montreal wholesale market see: Hawkins and Manning, The Montreal Wholesale Beef Trade, 1969. There were approximately four major independent wholesalers and two major packer branch houses in Montreal at the time of the study.

quality. In 1973, a group of Montreal wholesalers offered to pay 2.5 cents over market price to select their carcasses before shipping, feeling that their losses due to poor carcasses arriving in Montreal were sufficient to warrant this expenditure. The packers were alleged to have refused this offer. The issues of this dispute were complex, but any change in grading has major implications for this sector of the industry.

The Montreal wholesalers indicated the change in grading had had a marked effect on their sector of the industry. Disputes between themselves and their Western suppliers has increased. They felt that the quality standards for the top grades had been reduced and this fact had increased the percentage of unacceptable carcasses being shipped to them from the West.

Members of this sector of the industry agreed that the "dairy-type" steer carcass was a major problem as they were forced by their suppliers to purchase a number of these animals and had to break (cut into primals) these sides to sell them. They felt that, because of the retailers lack of acceptance of the grades, the percentage of animals which they had to break had increased, thus reducing the margin available to their sector of the industry.

Young bull carcasses were not preferred by the retail and wholesale trade in Montreal. Wholesalers had considerable difficulty merchandising bulls which fit into the A1 grades.

Finally, it was felt by several wholesalers that more attention should be spent in measuring the rib eye and its area should play a more dominant role in establishing any grade classification.

The warehousing function provided by the wholesalers was stated to be more important under the new grading regulations due to retailers basic attitude towards the new grading standards. The firms interviewed indicated that they had not experienced increased volumes with the new grades but did imply that their competitive position in the market had improved.

Meat Brokers

At the time of the study there were two principle brokers operating in the wholesale beef carcass trade in Canada. The acceptability of an official grading system is important to the broker as the grade-price settlement does not restrict itself to federal grades. Buyers and sellers may agree to a trade on carcass characteristics which are not officially classified such as carcass weight, sex, condition, etc., and the broker must negotiate these terms between buyers and sellers. The more precise the standards of grading, the more efficiently the broker can complete his function.

Both of the brokers involved with the Canadian beef carcass trade indicated that their function had become more difficult with the new grades. They indicated that their buy and sell arrangements were harder to complete because the use of extra carcass specifications by the beef trade (other than those used in the federal grades) had increased. Since the establishment of the new grades, grade and price were more difficult to establish in the Montreal market. The firms felt that part of this problem was from normal trade adjustments necessary after every

grade change, but indicated that many carcass quality disputes would remain more difficult to resolve under the new grading act.

Meat Purveyors

Structurally, beef processings firms in Canada are very diversified. Every packing plant visited in the study was involved with some form of beef processing. Most wholesalers and retailers were involved with preparing some types of processed beef. In addition, there were a number of independent meat processing firms which were involved in the preparation and distribution of processed meat only. Examples of such firms are meat purveyors, industrial caterers, and hamburger pattie and sausage making firms. Several meat purveyors were surveyed for the study.

The beef purchased by meat purveyors was either in the form of wholesale (primal) cuts or boneless beef, and not in carcass form. Each firm had its own specific requirements for the type of wholesale cuts needed to meet their demands. Price and availability of supply were among their major problems. The firms did, however, express strong but mixed concerns about carcass grading.

Purveyors were not able to obtain enough ribs and loins from beef carcasses weighing 700 lbs. and up and felt that beef producers should develop marketing techniques to promote the sale of heavy fronts and hips in order to establish sales for a balanced carcass of this type.

Retail Food Stores

The structure of the food retailing industry in Canada is dominated by large corporate retail chain stores. The only major exceptions to this situation are the retail-affiliated chain stores, (e.g., IGA) and these stores have been observed to behave in the market in

a manner similar to the large corporate chains.

The majority of the retailers sold only A1, A2, and A3 carcasses but they also selected carefully within these grades. Each retailer visited had carcass specifications within a grade such as illustrated in Appendix 5. The majority of retailers interviewed for the study were very definite about the type of beef carcass they wanted; but they could not clearly explain on what basis they developed their criteria except to indicate that "from experience they yielded the best quality of meat."

The retailers as a group were not directly concerned with grading except that every carcass they purchased had to be graded within the A category. The majority firmly believed that their individual selection of each carcass was the only acceptable control. None of the retailers visited would order carcasses on grade specifications alone. This was partially explained by their promotion technique of advertising "selections only from top grade beef".

As previously stated, all Eastern Canadian retail chain stores and most independent retailers selected their own meat before purchasing. The retail buyers indicated that the government grade alone was not a sufficient basis for selection to provide the quality they required. The cutability standards in the new grading system were acceptable to these sectors of the industry. However, only two of the sixteen retailing firms interviewed indicated that they had tested the cutability standards since they went into effect.

Of the firms which selected their carcasses personally, all indicated that knife ribbing was a benefit to them. The reason given for this benefit varied greatly. Buyers indicated that it allowed them

to judge the texture and color of lean meat, some also indicated that it helped in selection for degrees of marbling present, and some listed the advantage of assessing the thickness and texture of fat present. All firms in this part of the industry which handle beef in sides or quarters agreed that no operational problems were encountered due to knife ribbing.

It was apparent that the concern of the total beef industry with the "dairy-type" carcass resulted from the objections of the meat retailing sector of the industry. The large retail chain stores refused to purchase this type of carcass. Their reasons were varied but the most prevalent reason was that these types of carcasses were "underfinished" and lacked a full "hip". One large retail chain, however, had researched and tested the acceptability of the A1X carcasses and was selling meat from the "dairy-type" carcasses in their stores. The remainder of the firms had not, and stated that they "would not" do any testing on this product as they believed "the dairy-type is a lower quality carcass" and would not warrant the effort.

The stamping of young bulls with top grade steers and heifers was listed as a problem by a few retailers. Several retailers, principally located in Western Canada, indicated that they had "purchased a few", and had experienced satisfactory results in selling the meat as equivalent to A grade steer beef. The majority of the larger retail chains located in Eastern Canada indicated that they would not merchandize A graded bulls. Of this group of retailers few had tasted the meat from these carcasses and none seemed willing to test this type of meat in their stores.

As a group, retailers interviewed considered the A2 carcass as their ideal. They would not usually accept young A1 bull carcasses or A1X dairy-type carcasses. The majority did, however, claim that heifers were not discriminated against under the new grading system. The majority insisted on carcasses weighing between 550-650 lbs. with one large retailer accepting carcasses up to 700 lbs.

The principle concern with A1 specifications, according to several firms, was the wide variation in cut out percentage within the grade (one firm claimed a 3 percent variation).

Marbling was a controversial area in this set of interviews. The comments ranged from marbling being definitely required to the feeling that it had little benefit. The majority of firms interviewed expressed opinions somewhere in between these limits. Three of the sixteen retailers interviewed indicated that they were aware of research which had been done on marbling versus beef quality.

Aging was equally as controversial as marbling. The majority of firms indicated that their aging time varied with inventory requirements. Seven days appeared to be the general maximum. The sections of the industry which were using a cryovac process or the "boxed-beef" system were able to age their meat considerably longer, perhaps up to twenty-one days, but as a normal practice they did not. Only one firm in this section indicated that they were familiar with any research on aging versus beef quality.

All firms visited in this sector indicated a preference for Canadian beef but several indicated difficulties in obtaining an adequate supply from domestic sources. One large retail chain was importing U.S.

beef on a regular basis and they indicated this source was a small percentage of their total requirement. Several firms expressed the view that importing carcasses from the U.S. was uneconomical due to government regulations and their enforcement. The one firm importing regularly from the U.S. claimed to have experienced no such difficulty.

Centralized processing facilities which were being established by a few of the larger retailers were forcing large volume purchasing requirements onto these firms. The development of centralized meat breaking facilities by the retailer has led to renewed retailer interest in grading. Specification buying in large volumes is required to facilitate the use of a centralized plant and federal grades were important to this type of trade. This new type of beef retailer was of the opinion that the new grades were considerably better for them than the old grades, but they also felt that improvements in quality standards and improved accuracy of the cutability standards were required before Federal grades could be used for their large orders.

CHAPTER VII

SUMMARY, COMMENTS AND CONCLUSIONS

Summary

The new beef grades were officially inaugurated by the Canadian government on September 5th, 1972. Their initiation represented an attempt to introduce a quantitative measurement into the classification and standardization of beef carcasses in Canada. For several years particular segments of the beef industry in Canada had been endeavoring to introduce an evaluation of the percentage of meat available for retail sale into the beef grade standards.

Beginning six months after, and concluding fourteen months after the establishment of the new grades, the study was designed to look at the effects and operation of the new grading system. The areas of investigation were not selected to provide a complete analysis, but rather were specifically selected as key areas which required early review after the establishment of the new grades.

The study was developed around two basic areas. The initial phase was a pilot study concerned with the prediction of retail cutability and the subsequent pricing accuracy of the new beef grades. The second phase of the research study evolved around economic factors and conditions which lead to the necessity of developing a satisfactory grade classification scheme, and then into a consideration of the changes that have occurred and their impact on the individual sectors of the beef marketing system.

Shortcomings of the Study

The retail cutability section of the study was designed to align itself with the situation faced by the meat retailers. Several different retail stores, and a large number of meat cutters were used for the cutting tests. In measuring the differences of retail yield of carcasses within a grade, it was not possible to measure the variance caused by the lack of standardization of cutting. The amount of this variation was mostly eliminated by requiring each carcass to be prepared to the specifications outlined in Appendix 4. From general observation, it appeared that some cutting variability between meat cutters still remained, but because of the size of sample used, the variance was not enough to effect the overall results.

With so little information available on the structure, conduct, and performance of the beef industry in Canada, the results of the study on the economic effects of the new beef grades were limited. For the time periods considered in the study, very little information on the type, size, location, growth, or activities of firms operating in the beef market was available. The resistance of many firms to discuss this type of information at the industry interviews meant that a limited amount of new information was gathered. Thus, the description of the Canadian beef market and the affects of the new grades on it remained general.

Conclusions

The Accuracy of the New Cutability Grades

1. In assessing the quantity standards of the new beef grading system, grade as a predictor of retail yield was found to be of limited

value. Large variations existed within grade categories. However, the averages for groups of carcasses within a category showed less variation. Thus, to the retailer, the grading system acts only as a general and limited indicator of retail yield.

2. The study confirmed the results of Iler, Locking and Usborne¹ - that a single minimum fat measurement was as reliable an indicator of retail yield as the three fat measurements originally proposed by Fredeen (Appendix 1). The addition of the rib-eye measurement yielded little improvement in the prediction of retail meat yield. Any improvement in accuracy would entail the full ribbing of the carcass, and the use of several additional measurements. At the time of the study, no single or combination of previously tested measurements would improve the accuracy of the quantity standards in the new grades.

3. A comparison of wholesale and retail prices indicated that wholesale prices did not reflect differences in retail value. The results indicated that the wholesale beef prices of A2, A3, and A4 grades have been constantly too high in relation to the wholesale price of the A1 carcass, thus retailers were receiving progressively lower margins from the A2, A3, and A4 grades. Also the current discount price of 2.5 cents per lb. , which has been applied to the informal wholesale grade of A1X by the meat trade, would appear to be an accurate reflection of retail cut-out value.

¹ Iler, Locking and Usborne; A study of Some Methods of Evaluating and Handling Beef Carcasses For the Purposes of Grading, July 1971

4. The wholesale beef trade has developed an unofficial grade, A1X, in order to classify dairy-type carcasses within the official A1 grade. Live cattle buyers feel that the buying of dairy-type steers is a problem because of the difficulty in predicting the carcass grade. Western Canadian plants had difficulty moving any volume of A1X carcasses, while in Toronto, packers expressed little concern - as they were able to market these carcasses to advantage. Montreal wholesalers had difficulty in merchandising A1X carcasses, due to the refusal of the large retail meat buyers to buy dairy-type steers. The results would indicate that dairy-type A1X carcasses should be reclassified as A2 carcasses; in line with their evident retail cut-out capability. Thus, it is recommended that reintroduction of conformation grading for this type of carcass be reconsidered.

The Economic Effects of the New Beef Grading System

1. The total demand for beef is increasing faster than Canadian production, and substantial deficits of beef production are becoming an increasing problem. Canadian per capita beef consumption is lagging ten years behind the United States; thus, Canadian per capita beef consumption could be 120 lbs. by 1982 if supplies are available.

2. Approximately 70 percent of Canadian beef slaughter is in Alberta and Ontario. The leading consumption areas for beef are Toronto, Vancouver and Montreal. Thus, Montreal and Vancouver are large deficit areas for beef supplies. A major portion of the Montreal market is serviced by rail, while increasing truck shipments to Ottawa and Toronto and Vancouver are occurring. Trucks are loaded in order to facilitate direct shipments of beef to eight to ten individual retail

food stores. "Piggy-back" rail transportation will play an increasing role in this developing transportation technique.

3. The movement of slaughter cattle from west to east in Canada is diminishing rapidly, while carcass movement is accelerating due to the substantial drop in the number coming to market.

4. The new beef grades have increased the price differential against overfat cattle, and there has been a substantial drop in the number coming to market.

5. The new beef grading system has tended to reduce buyer discrimination against heifers and young bulls.

6. Rail grade buying by packers represents less than 10 percent of cattle sold, and the amount involved is not increasing.

7. Live cattle buyers have had to adapt to dressing percentages of 2 to 3 percent lower; as they have had to adjust to buying live cattle using the newly developed beef grade criteria.

8. Several packers interviewed felt that underfinish was a problem, and that the minimum fat requirements were too low.

9. The introduction of knife ribbing appeared to be no problem for the meat trade.

10. The Montreal wholesalers continue to have disagreements with western shippers in regard to dark cutting carcasses and dairy type A1 grade steers. These problems appear difficult to resolve, and have increased with the new grades. The wholesalers would prefer to have all carcasses fully ribbed.

11. Purveyors and restaurant buyers are very concerned about the lack of Canadian heavy ribs and loins available for their use and they

continue to increase their purchases from the United States. They felt that minimum specifications for rib-eye size should be included in the grade standards.

12. Most beef retailers continue to select their individual carcasses. While the majority insist that all beef they buy be graded, they did not feel that grade alone was a sufficient selection criterion for their stores.

13. Retail meat buyers as a group were not aware of beef carcass aging research, nor had they performed cutting tests on A1X or bull carcasses. They also were not eager to change buying policies. It was apparent, however, that retailers have an increased awareness of fat cover.

Recommendations Concerning Further Research

Research is needed to find more accurate methods of measuring the amount of retail meat available in a beef carcass. The value of the new cutability grades was shown to be limited, and the A1X grade unacceptable as it stands. Thus, changes in the new act are needed, but these changes must be preceded by further research before implementation.

The ever increasing number of government policy decisions being directed at the beef industry have been made with little research information available on the beef industry. Much information is needed before effective policy decisions can be adopted. Needed projects might include: a review of all statistical data now available on the beef industry, with the goal of expanding it into more complete and useful areas; a national, or a series of regional studies, to outline the basic structure of the beef industry in Canada; a consolidation of historical data, wherever possible, to gain much needed background information on the conduct and performance of all sectors of the beef

market. It would appear that the beef industry in Canada has thus far been missed by the dismal, but calculating eye of the economist; and it would be for the betterment of all Canadians to end this situation.

More cooperation between the industry, the federal government, and the university researcher could only lead to a more objective view being taken to industry problems. The history of negotiated solutions to problems between the beef industry and governments, without consideration for the development of needed information, has reduced the amount of available technology that has been introduced into the industry. The promising future of the Canadian beef industry can best reach its fullest potential in an atmosphere of trust and objective inquiry.

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APPENDIX 1

A PROPOSAL FOR REVISION OF CANADIAN BEEF GRADING STANDARDS*

Formal Statement of Proposal

The essence of the proposal is as follows:

- standards based on objective quantity criteria (rib fat and rib eye area)
- youthfulness as the primary "quality" criterion, in accordance with present grading practice.

A. Quantity Schedule

Carcasses to be classified according to the total rib fat (sum of 3 measurements) and rib eye area (as measured at the 11-12 rib interface cut according to a standard procedure) by the following schedule:

<u>Fat Group</u>	Total Fat (in.)	<u>Rib Group</u>	Rib eye area (sq.in.)
1.	less than 0.60	1.	less than 6.0
2.	0.60 - 1.19	2.	6.0 and 7.9
3.	1.20 - 1.79	3.	8.0 - 9.0
4.	1.80 - 2.39	4.	10.0 - 11.9
5.	2.40 - 2.99	5.	12.0 - 13.9
6.	3.00 - 3.59	6.	14.0 - 15.9
7.	3.60 - 4.19	7.	16.0 - 17.9
8.	4.20 and over	8.	18.0 and up

B. Standards Schedule

Class 1: Carcasses from youthful animals, excluding those in poor condition or thinly fleshed, which meet the following age criteria. bones soft, red and porous when split, pearl-like capping cartilages on the lumbar vertebrae, marked indication of youth in the chine, sternum, sacrum and aitch bones except that the cartilages may have slight granulation in the upper dorsal area. (These age specification are identical with previous specifications for the Canada Choice grade).

Carcasses of Class 1 shall be further described as provided in A (quantity schedule by the appropriate fat and rib eye class numbers).

Class 2: Carcasses not eligible for Class 1 but meeting the following age requirements:

*Paper presented by H.T. Fredeen to the "Industry Committee on Beef Grading and Quality", February, 1970.

cartilage on the tips of the lumbar vertebrae or a red line (where the cartilage was present) indicating that ossification was only recently completed; some pearl-like cartilage evident on the tip of the dorsal thoracic vertebrae and the sternum bone. (These age specifications are identical with those prescribed for Canada Commercial 2).

Carcasses of Class 2 shall be further described as provided in A (Quantity Schedule) the appropriate fat and rib eye class numbers.

Class 3: Carcasses of mature steers and cows. Sacrum fused, all traces of cartilage gone from the sternum.

Carcasses of Class 3 may be further described as provided in A (Quantity Schedule).

Class 4: Carcasses of mature bulls and mature stags. Age as described for Class 3.

Grade Stamping

The grade stamp applied to the carcass shall consist of 3 digits as follows:

- first digit : Class code number (1-4)
- second digit : Fat class (1-9)
- third digit : Rib eye class (1-9)

Example: An animal of class 1 with 2.5 inches total fat and 13.5 sq. in. of rib eye shall be graded 1.5.5

Grade Branding

All class 1 beef shall be eligible for the grade description "Class 1" applied in red ink.

All class 2 beef shall be eligible for the grade description "Class 2" applied with brown ink.

All class 3 beef shall be eligible for the grade description "Class 3" applied with black ink.

Grade Certificates

When so requested by the consignor or his agent, and provided that the animals in question have been suitably identified by the consignor or agent with identification transferred to the carcass, the grading service shall issue grading certificates listing the official grade (3 digit code number) and other relevant information for the animal or animals.

APPENDIX 2

RESEARCH BACKGROUND

Results from beef carcass research, Lacombe, 1969

H.T. Fredeen, A.H. Martin and G.M. Weiss

Summary

1. Yield of closely trimmed bone-in primal cuts, expressed as a percentage of cold carcass weight, ranged from 58 to 78 percent. Averaged by sex were:

Steers	68.4% (51.4)
Heifers	66.7% (49.5)
Bulls	70.5% (54.1)

Lean of the carcass (i.e., boneless, defatted product) expressed as a percent of cold carcass weight averaged about 16% less (bracketed figures above).

2. "Choice" carcasses were significantly fatter than "Good" carcasses and carried more marbling, more chemical fat and lower color scores. But "Choice" carcasses also tended to be less tender.
3. Lean content of the beef carcass was estimated with reasonable accuracy by using two objective carcass measurements--area of rib eye and total fat (sum of 3 measurements) over the rib eye.
4. Conformation as indicated by actual measurements taken on the carcass were of virtually no value in predicting total quantity of lean or the distribution of lean in the carcass.
5. A high proportion of weight in the hindquarters was not indicative of high retail yield or value. While yield of retail product from the carcass and from each of the component cuts was positively correlated with percent rough chuck and percent rough round they were negatively correlated with percent rough short loin.
6. Carcass weight was a direct measure of total pounds of retail product but useless as a predictor of percentage yield of trimmed cuts.
7. There was no conflict between tenderness and lean content. In fact the correlations of tenderness and percent lean (or C.T.) yield indicated the leaner carcasses were most tender.

8. For bull carcasses, tenderness was related to meat color, the darker the color the higher the taste panel rating and lower the shear force requirement. For steers and heifers the color-tenderness correlation was essentially zero.
9. Marbling was not correlated with tenderness.
10. Marbling and rib fat were moderately correlated, the greater the rib fat the greater the amount of marbling.
11. Lean tissue judged devoid of marbling contained a substantial amount of chemical fat. The minimum chemical fat recorded was 7.74% (dry matter basis).
12. Tenderness was improved by aging but most of the change observed in a 13-day aging period had taken place by the sixth day.
13. Meat from the forequarter (anterior l. dorsi) was substantially more tender than meat from the hindquarter (posterior l. dorsi).
14. Bulls were significantly superior to steers ($P < 0.05$) in the following respects:
 - dressing percentage (59.3 vs. 68.8%)
 - lean content of the carcass (54.1 vs. 51.4%)
 - total rib fat (1.87 vs. 2.28%)
 - rib eye area (12.00 vs. 10.5 sq. in.)
 - % bone of carcass (13.3 vs. 13.6%)
 - % chemical fat of lean tissue (13.4 vs. 15.2%)
 - tenderness as scored by taste panel (5.2 vs. 4.7)

These differences between the overall sex means were evident between bulls and steers of the same grade or the same carcass weight.

APPENDIX 3

A STUDY OF SOME METHODS OF EVALUATING AND HANDLING BEEF CARCASSES FOR THE PURPOSE OF GRADING*

D.C. Iler, G.L. Locking, and W.R. Usborne

Summary of Results

1. The following methods of evaluating fat thickness are listed in the descending order of accuracy:
 - a. knife fat thickness (knife-ribbed only) ($r^2 = 87\%$)
 - b. estimated fat class (carcass ribbed) ($r^2 = 83\%$)
 - c. optical probe ($r^2 = 77\%$)
 - d. pin probe ($r^2 = 67\%$)
 - e. subjective fat class (carcass not ribbed) ($r^2 = 61\%$)
2. One actual fat measurement (3/4 distance) had a correlation coefficient with the total fat thickness of two actual measurements of 0.95 ($r^2 = 90\%$).
3. One measurement as determined by the two methods of probing and the knife-ribbed method was not as accurate as the total of two measurements.
4. The graders were more proficient in estimating rib eye area ($r^2 = 83\%$) than in estimating rib class ($r^2 = 71\%$).
5. Fat can be measured on the knife-ribbed carcass with little difficulty. Rib eye area and quality evaluation are difficult to determine when using this method of ribbing.
6. The effect of the time of ribbing after slaughter on meat quality was not a problem except on poorly finished carcasses and on the occasional well finished carcasses.
7. Carcasses ribbed 7 and 14 days after slaughter did not discolor or dehydrate as much as those carcasses ribbed one day after slaughter. Approximately one-third of a pound was trimmed from each cut surface on the beef ribbed the first day after slaughter. This trim was suitable for use in ground beef.

* A beef grading project jointly sponsored and conducted by:
Canadian Department of Agriculture
Canadian Cattleman's Association
Canadian Federation of Agriculture
Meat Packer's Council of Canada
University of Guelph

8. In all probability the reduction in cooler capacity to accommodate either partially or fully ribbed carcasses is somewhere between 5 and 10%.
9. There were some problems encountered in moving the partially and fully ribbed carcasses within a cooler and between coolers.
10. Under the terms and conditions of this study there were no major problems in the shipping of partially and fully ribbed sides by rail from West to East.

APPENDIX 4

RETAIL CARCASS CUTTING TESTS - 1973

Front Quarter Classification Weight Hindquarter Classification Weight

Wholesale Rib

Prime Rib
Rib Roast
Short Ribs
Ground Beef
Fat
Bone

Plate

Rolled Plate
Ground Beef
Fat
Bone

Chuck

Round Bone Roast
Cross Rib Roast
Stew
Ground Beef
Fat
Bone

Shank

Center Cut
Ground Beef
Stew
Fat
Bone

Wholesale Hip

Rump Roasts
Round Steaks
Stew
Ground Beef
Fat
Bone

Loin

Sirloin Tip
Sirloin Steak
Porterhouse
T Bone
Club
Stew
Ground Beef
Fat
Bone

Flank

Flank Steak
Stew
Ground Beef
Fat
Bone

Total

Total

APPENDIX 5

DOMINION STORES LIMITED
THE IDEAL BEEF ANIMAL

Please find below the type of beef we require for our Meat Departments:

1. Sex Steer Beef only.
2. Age The animal should reach top quality before it reaches the age of 26 months.
3. Weight The most desirable weight is between 550 and 625 pounds.
4. Conformation:

The most desirable conformation in a beef carcass will show full fleshed rounds on the top or posterior as well as on the sides of the round and edgewise, viewing from the back of the split sides. The steak piece of sacrum section should be fleshed to where its outside surface is at a ringle angle to the saw cut. The short loin along the back should be well furnished with flesh showing a padding along the top or outer edge of the lumbar vertebrae. Also, there should be a good span or depth of chine denoting thickness of flesh in proportion to weight of carcass. The rib portion of the side, just below the short loin, when hanging should have the same fullness of flesh as the loin - the wedge end of the blade bone should be well filled. The chuck should show convex fleshing over the blade and humerus bones and fullness in the neck vein below the shoulder point. The shanks should be short and well fleshed.

Conformation is one of the main factors in determining the grade of beef as it has to do with the ratio of meat to bone. Good breeding comes first and good feeding second, in the production of a well proportioned, well fleshed carcass of beef.

The thickness of fat on a carcass of beef in our class weight of 550 to 625 pounds with around 1/2 inch of fat covering at the rib cut have sufficient for choice beef, there being ample finish for the consumer who likes fat beef.

The beef we buy must be bright red in colour when cut into steaks, roasts, etc. and well marbled with fat throughout the lean. At no time must we accent dark cutting or black cutting beef as it is sometimes called.

The type of animal we like to have is short, stocky, and not overly fat to the point where it has a great deal of waste.

APPENDIX 6

QUESTIONNAIRE, BEEF GRADING STUDY

CATTLE BUYERS, COMMISSION AGENTS

Name of firm _____

Address _____

Interviewer _____ Position _____

A. General Information

1. Weekly volume of cattle handled

Feeder cattle _____. range _____

Slaughter cattle _____. range _____

2. Slaughter cattle by specification - weekly volume by estimated grade.

Steers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C _____

A₄ _____ D-2-3-4 _____

Heifers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C-1-2 _____

A₄ _____

Cows D-1 _____ D-3 _____

D-2 _____ D-4 _____

Bulls A₁ & 2 _____ C-1-2 _____

A₃ & 4 _____ E _____

B₁ & 2 _____

B₃ & 4 _____

3. Slaughter cattle source of supply (percentage) by grade:

	Commission Firms	Auction Markets	Feeders (over 500 head)	Feeders (under 500 head)	Dealers or Drovers	Order Buyer	TOTAL
Steers A							
Steers B & C							
Heifers A, B, C							
Cows D							
Bulls A & B							
Bulls E							
"Dairy Type" Steers A, B.							
"Dairy Type" Bulls A & B							

100%

How has this changed with the new grading system? _____

4. Estimated annual trade with U.S.A. (head)

Imports _____

Exports _____

Would you please describe your import/export markets and how they operate? _____

5. Slaughter cattle terms of purchase (percentage) by grade

	Live by Head	Live by Weight	Rail Graded	Sealed bids by live weight	Sealed bids by rail grade	Contract by Live weight	Contract by rail grade	Others	TOTAL
Steers A									
Steers B & C									
Heifers A									
Heifers B & C									
Cows D									
Bulls A & B									
Bulls E									
"Dairy Type" Steers A, B, C									
"Dairy Type" Bull A & B									

How has this changed with the new grading system

6. Slaughter cattle destination (percentage) by grade

	Local Packer	Regional Packer	National Packer	Abattoirs	Resale	Other	Total
Steers A							
Steers B & C							
Heifers A							
Heifers B & C							
Cows D							
Bulls A & B							
Bulls E							

How has this changed with the new grades (holds for resale)?

7. Out of province live cattle destination (weekly volume) by grade

	Western U.S.A.		Eastern U.S.A.		Toronto		Montreal		Vancouver		Winnipeg		Other		Total	
	A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R
Steers A																
Steers B & C																
Heifers A																
Heifers B & C																
Cows D																
Bulls A & B																
Bulls E																

* A = average
R = range

How has this changed with new grade? _____

What type of transportation do you use to move these cattle to the various markets (rail, truck)

B. New Grades

1. How much more difficult is it to estimate the grades for live animals with the new system?

- a) how do you make these estimates (weight, conformation, etc.)

Grade A _____

B _____

C _____

D _____

E _____

- b) do breeds or breed characteristics serve as useful indicators in these estimates _____.

what do you select for? _____

2. Do you do more bidding on a rail basis for cattle having a high risk (ie. grubby or taggy cattle, possible excess shrink, etc.) with the new grading system? _____

Why (or why not)? _____

3. What adjustments have producers made to the new grades? _____

What trends do you see? _____

7

5. What are the price differentials within the A grade for

Bulls _____ range _____

"Dairy type" steers _____ range _____

Heifers _____ range _____

How do these differ from the old grading system? _____

Do you see any trends with this situation? _____

6. What effects have the new grades had on the feeder cattle market? _____

What trends do you see? _____

C. Market Efficiency

1. What costs have the new grades added to your marketing cattle? _____

2. Is the slaughter cattle market more clearly defined with the new grading system? _____

Are prices easier to or more clearly established? _____

Are prices within grades more or less stable than before? _____

3. Are producers more aware of quality when selling their cattle

What trend do you see? _____

4. Is your market more competitive with the new grading system?

Who is your strongest competitor? _____

Who is your weakest competitor? _____

Is this a change? _____

5. What influence has the new grading system had on the import/export market with the U.S.? _____

What grades are we importing? _____

What grades are we exporting? _____

Is there a tendency to trade carcasses rather than live cattle? _____

D. General

1. What changes would you like to see in the new grading system?

APPENDIX 7

QUESTIONNAIRE

BEEF GRADING STUDY

BEEF MANAGERS, WHOLESALERS, BROKERS

Name of Firm _____

Address _____

Interviewer _____ Position _____

A. General Information.

1. Weekly volume (carcass equivalent). average _____
range _____

2. Carcass specification - weekly volume by estimated grades.

Steers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C . _____

A₄ _____ D-2-3-4 _____

Heifers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C-1-2 _____

A₄ _____

Cows D-1 _____ D-3 _____

D-2 _____ D-4 _____

Bulls A₁ & 2 _____ C-1-2 _____

A₃ & 4 _____ E _____

B₁ & 2 _____

B₃ & 4 _____

3. Carcass distribution (percentage) by grade

	Chain Stores	Small Retailer	Restaurants Hotels, etc.	Perveyors	Primal Cuts	Canners and Cutters	Other (Specify)	TOTAL
Steers A, & A2								
Steers A3 & A4								
Steers B & C								
Hefifers A, B & C								
Cows D								
Bulls A & B								
Bulls E								
"Dairy type" Steers A & B								100%
"Dairy type" Bulls A & B								

How has this changed with the new grades?

4. Carcass grade distribution (percentage) by weight.

	Weight Range					TOTAL
	under 400 lbs.	400-500	500-600	600-700	over 700	
Steers A ₁ & A ₂						
Steers A ₃ & A ₄						
Steers B & C						
Heifers A, B & C						
Cows D						
Bulls A & B						
Bulls E						
"Dairy Type"						
Steers A & B						
"Dairy Type"						
Bulls A & B						

5. Transportation of Meat Supplies (percentage)

	Truck	Rail	Total
Toronto			
Winnipeg			
Saskatoon			
Edmonton			
Calgary			
Lethbridge			
Other (specify)			

6. Sources of Supply (Percentages) - Wholesalers & brokers only

	Montreal			Hull			Toronto			Winnipeg			Saskatoon			Edmonton			Calgary			Lethbridge			Other			Total		
	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.	T.	B.	C.
Packer																														
Local																														
Provincial																														
National																														
Wholesaler																														
Total																														

Key:

T. = Total Carcass equivalent

B. = Percentage of Total Purchased through a broker

C. = Percentage of Total Requirements purchased as cuts or boneless*

7. Distribution Channels

FROM	Warehouse	Retail Operation	Other	Total
TO				
Hotel				
Restaurant				
Institutions				
Packers				
Local				
Provincial				
National				
Wholesalers				
Retail				
Chains				
Affiliates				
Independents				
Total				

B. New Grades

1. Is buying by only grade specifications, more noticeable in your market with the new grades? _____
 Percentage before new grades? _____
 Percentage now? _____
 Which buyers presently buy exclusively by specification? _____

2. What type of extra selection system do you provide for your buyers? _____

Is a visual inspection of the rib eye used as an indicator in your selection? _____ What are you selecting for? _____

3. Accuracy of new grading standards:
Are the number levels (A₁, A₂, A₃ etc.) accurate indicators of carcass fat levels? _____

Are the quality grades (A, B, C etc.) sufficient and accurate indicators for servicing your market? _____

4. What changes have you made in your handling or preparation procedure with the new grading system? _____

5. How have the new grades added to the cost of your operation? _____

Has "knife ribbing" caused any problems (handling, extra shrink, etc.)? _____

6. How long do you age beef? _____
Has this changed with the new grades? _____

7. What is your policy in regards to adjustment for:

- a) Dark cutters _____
- b) Over finish _____
- c) Weight differences _____
- d) Excessive shrink _____

Has the frequency of these problems, or your policy towards them changed with the new grades? _____

8. What grades of carcasses do you trim off fat before resale?

How much of this do you do? _____
How has this changed with the new grades? _____

9. Should confirmation be included in the new grading system?

_____ (if yes) What should be considered? _____

C. Market Efficiency

1. What information or guidelines do you utilize in establishing your price?

Buying? _____

Selling? _____

How has this changed with the new grades? _____

2. Payments are made on:

Suppliers weights? _____

Delivered weights? _____

Changes with new grades? _____

3. How many days in advance of delivery are purchases (carcasses) made? _____

Retail sale? _____

4. What are the price differences within the A grade carcasses on?

"Dairy type", average _____

range _____

Young bulls, average _____

range _____

What changes in the pricing and distribution of these two has occurred with the new grading system (trends)? _____

5. Are prices within the grades more or less stable than before?

Are they reflective of carcass value? _____

Are carcass prices easier to, or more clearly established in your market?

Buying? _____

Selling: _____

6. Is there a problem with overfat carcasses (trend since new grades)? _____

Are underfinished cattle now a problem? _____
(if yes) What percentage? _____

7. What type of carcasses do the restaurants and pervayors desire?

Are you able to compete effectively in this market (ie. U.S. imports)? _____

Has the situation with these markets changed with the new grades? _____

8. Is your market more competitive with the new grading system?

Who is your strongest competitor? _____

Who is the weakest? _____

Is this a change? _____

9. What percentage of your carcasses are sold as primal cuts?

What grades do you sell as primals? _____

What is the price difference (per lb.) compared to full sides.
average _____

range _____

How has this market changed with the new grades? _____

10. What influence has the new grading system had in the import/
export market with the U.S.? _____

What grades are we importing? _____

What grades are we exporting? _____

Is there a tendency to trade carcasses rather than live
cattle? _____

D. General

1. What changes would you like to see in the new grading system?

APPENDIX 8

QUESTIONNAIRE

BEEF GRADING STUDY

RETAIL FIRMS, INSTITUTIONS AND RESTAURANT CHAINS

Name of Firm _____

Address _____

Interviewer _____ Position _____

A. General Information.

1. Weekly volume (carcass equivalent). average _____
range _____

2. Carcass specification - weekly volume by estimated grades.

Steers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C _____

A₄ _____ D-2-3-4 _____

Heifers A₁ _____ B₁ & 2 _____

A₂ _____ B₃ & 4 _____

A₃ _____ C-1-2 _____

A₄ _____

Cows D-1 _____ D-3 _____

D-2 _____ D-4 _____

Bulls A₁ & 2 _____ C-1-2 _____

A₃ & 4 _____ E _____

B₁ & 2 _____

B₃ & 4 _____

3. Carcass sources (percentage) by grade

	Local Packer	Regional Packer	National Packers	Abattoirs	Wholesalers	Others	Total
Steers A, & A ₂							
Steers A ₃ & A ₄							
Steers B & C							
Heifers A, B & C							
Cows D							
Bulls A & B							
Bulls E							
"Dairy Type" Steers A & B							
"Dairy Type" Bulls A & B							

How has this changed with the new grade? _____

3

4. Purchased carcass grade distribution (percentage) by weight.

	Weight Range					TOTAL
	under 400 lbs.	400-500	500-600	600-700	over 700	
Steers A, & A ₂						
Steers A ₃ & A ₄						
Steers B & C						
Heifers A, B & C						
Cows D						
Bulls A & B						
Bulls E						
"Dairy Type" Steers A & B						
"Dairy Type" Bulls A & B						

5. Transportation of Meat (percentage) from out of town suppliers.

	Truck	Rail	Total
Toronto			
Winnipeg			
Saskatoon			
Edmonton			
Calgary			
Lethbridge			
Other (specify)			

4

B. New Grades

1. Do you buy carcasses by grade specification only _____
 (if no) Why? _____

What type of extra selection system do you use & what do you
 select for _____

Is a visual inspection of the rib eye an indicator in your
 selection _____. What are you selecting for? _____

2. Accuracy of new grading standards:

Are the number levels (A_1 , A_2 , A_3 etc.) accurate indicators of
 carcass fat levels? _____

Are the quality grades (A, B, C etc.) sufficient and accurate
 indicators for servicing your market? _____

3. What changes have you made in your handling or preparation procedure with the new grading system? _____

4. How have the new grades added to the cost of your operation?

Has "knife ribbing" caused any problems (handling, extra shrink, etc.)? _____

5. How long do you age beef? _____

Has this changed with the new grades? _____

6. What is your policy in regards to adjustment for:

- a) Dark cutters _____
- b) Over finish _____
- c) Weight differences _____
- d) Excessive shrink _____

7. Has the frequency of these problems, or your policy towards them changed with the new grades? _____

6

8. Do you purchase primal cuts? _____

Estimated weekly volume by grade:

A _____ D _____

B _____ E _____

C _____ F _____

Are you able to order the fat levels (1, 2, 3, 4) you desire

Are primals trimmed before you receive them _____

(if yes) what grade & fat level are these _____

What is the normal price variance between primals & carcasses
by grade?

A _____ D _____

B _____ E _____

C _____ F _____

How has this market changed with the new grades? _____

9. What reaction have you noticed from the consumer towards the new
grades? _____

Does the new A grade limit or improve your promotion and
advertising? _____

Has your percentage of returns (dissatisfied consumers) changed
with the new grading system? _____

7

10. Has the new grading system allowed for any price saving to be passed on to the consumer? _____

11. Has the amount of trim on your retail cuts changed with the new grading system? _____

Is there a problem with under finish on some cuts from A₁ carcasses? _____

12. What is your policy towards "dairy type" or young bull carcasses in the A grade? _____

How do you differentiate these carcasses? _____

Do you feel the price differences for these carcasses is a reflection of value or market attitude? _____

13. Should confirmation be included in the new grading system? _____
 _____ (if yes) What should be considered _____

C. Market Efficiency

1. What information or guidelines do you utilize in establishing your price?

Buying? _____

Selling? _____

How has this changed with the new grades? _____

8

2. Payments are made on:

Suppliers weights? _____

Delivered weights? _____

Changes with new grades? _____

3. How many days in advance of delivery are purchases (carcasses) made? _____

Retail sale? _____

4. What are the price differences within the A grade carcasses on?

"Dairy type", average _____

range _____

Young bulls, average _____

range _____

What changes in the pricing and distribution of these two has occurred with the new grading system (trends)? _____

5. Are prices within the grades more or less stable than before?

Are they reflective of carcass value? _____

6. Are prices more or less stable within the grades than before?

7. Has the new grading system effectively eliminated the problem of over fat carcasses in the market (trend)?

8. Is your buying market more competitive with the new grading system?

Who is your strongest competitor?

Who is the weakest?

Is this a change?

D. General

1. What changes would you like to see in the new grading system?

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